

# OAK VALLEY OUTLOT

## 2665 OAK VALLEY DRIVE

### PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

## PRELIMINARY SITE PLAN

#### OWNER/APPLICANT

OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
CONTACT: FRED GOLDBERG

#### ENGINEER/SURVEYOR/LANDSCAPE ARCH.

MIDWESTERN CONSULTING, LLC  
3815 PLAZA DR.  
ANN ARBOR, MI 48108  
CONTACT: KATE BOND  
734-995-0200

#### ARCHITECT

ROGVOY ARCHITECTS  
20700 CIVIC CENTER DRIVE, SUITE 170  
SOUTHFIELD, MI 48076  
KRISTEN LARK  
248-540-7700 EXT. 237

#### SITE DATA

	Allowed/ Required	Proposed
Ann Arbor - Saline Road and Waters Road Form-Based Zoning Code		
<b>Oak Valley Centre Overall Parcel</b>		
Site Area (gross)		1,404,798 sf
minus access easements/ROW/street easements		32.25 Acres
minus wetland/bodies of water		-20,014 sf
AA-Saline Road ROW		14,999 sf
Site Area (net)		1,399,783 sf total net
Outlot Only		32.13 acres
Site area (gross)	(Assumes Back of Curb access drives to ROW of Waters/AA Saline Road)	98,975 sf
minus access easements/ROW/street easements		2,753 sf
AA-Saline Road ROW		14,999 sf
		116,227 sf total net
		2.68 acres
Zoning	Current Zoning: Form-Based	Form-Based Proposed
<b>Form Based Code</b>		
<b>Ann Arbor Saline Road</b>		
Street Type	Urban	Ann Arbor Saline
Site Type	A	Small sites/out-lot additional lot site
Building Form	A	Permitted - min. 1 & max. 3 story, general single-purpose buildings.
	B	Permitted - min. 2 & max. 3 story, multi-tenant
	C	Conditional - min. 2 & max. 3 story, typically residential
	D	Not Applicable - min. 2 & max. 4 story, residential on top of retail
	E	Not Applicable - Varies between rear and front building: 1 - 4 stories, multi-retail and entertainments
Use Groups	1	Not Applicable - Residential Uses
	2	Permitted - Residential / Lodging uses
	3	Permitted - Office / Institutional
	4	Conditional - Automobile / Transportation Uses
	5	Permitted - Retail, Entertainment, and Service Uses
	6	Not Applicable - Miscellaneous Commercial Uses
	7	Not Applicable - Industrial Uses
<b>Waters Road</b>		
Street Type	Suburban	Waters Road
Site type	D	Outlot parcel
Building Form	A	Permitted - min. 1 & max. 3 story, general single-purpose buildings.
	B	Permitted - min. 2 & max. 3 story, multi-tenant
	C	Conditional - min. 2 & max. 3 story, typically residential
	D	Permitted - min. 2 & max. 4 story, residential on top of retail
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	4	Conditional - Automobile / Transportation Uses
	5	Permitted - Retail, Entertainment, and Service Uses
	6	Not Applicable - Miscellaneous Commercial Uses
	7	Not Applicable - Industrial Uses
<b>Building - Assumes Building Form A, Building Use 3</b>		
Proposed Use		Financial Institution
Floor Area	NA	5,005 sf
Maximum Height	1 story, 14 ft minimum	1 story, 22 ft
Setbacks	3 story, 38 ft maximum	
Front	10ft setback, 75% building facade minimum	TBD ft
	Side	none, 5 ft minimum if provided
	Rear	945 ft
Parking	side or rear yard, screening from ROW if in side yard	Rear
Pedestrian access	required from ROW and cross access in outlot	Provided
<b>Impervious Surface</b>		
Outlot - Building Type A	80% maximum	30,606 sf 26.2%
Oak Valley Centre Overall - Building Type E	90% maximum	858,095 sf 61.1%
<b>Vehicular Parking</b>		
Design standards	9.5ft x 20ft with 22ft aisle - 90 degree	
Required Parking	1 per 200sf plus 1 per 2 non-drive ATMS - financial institution 5,005sf/200sf = 25 Spaces required *Building does not provide non-drive ATMS.	32 Spaces Provided
<b>Loading Spaces</b>		
Design standards	10ft x 55ft with 15ft height clearance	
Commercial/Office	1 for first 5,000sf, additional for between 5,001 and 60,000sf - 1 per 20,000sf 5,005 / 5000 = 1 Space required.	1 Provided
<b>Bicycle Parking</b>		
Required Bike rack	All sites with 10+ parking spaces requires to have minimum 1 bike rack and accommodate 2 space.	1 Provided



#### SITE MAP

SCALE : NTS

#### LEGAL DESCRIPTION

Ground Lease Parcel 1

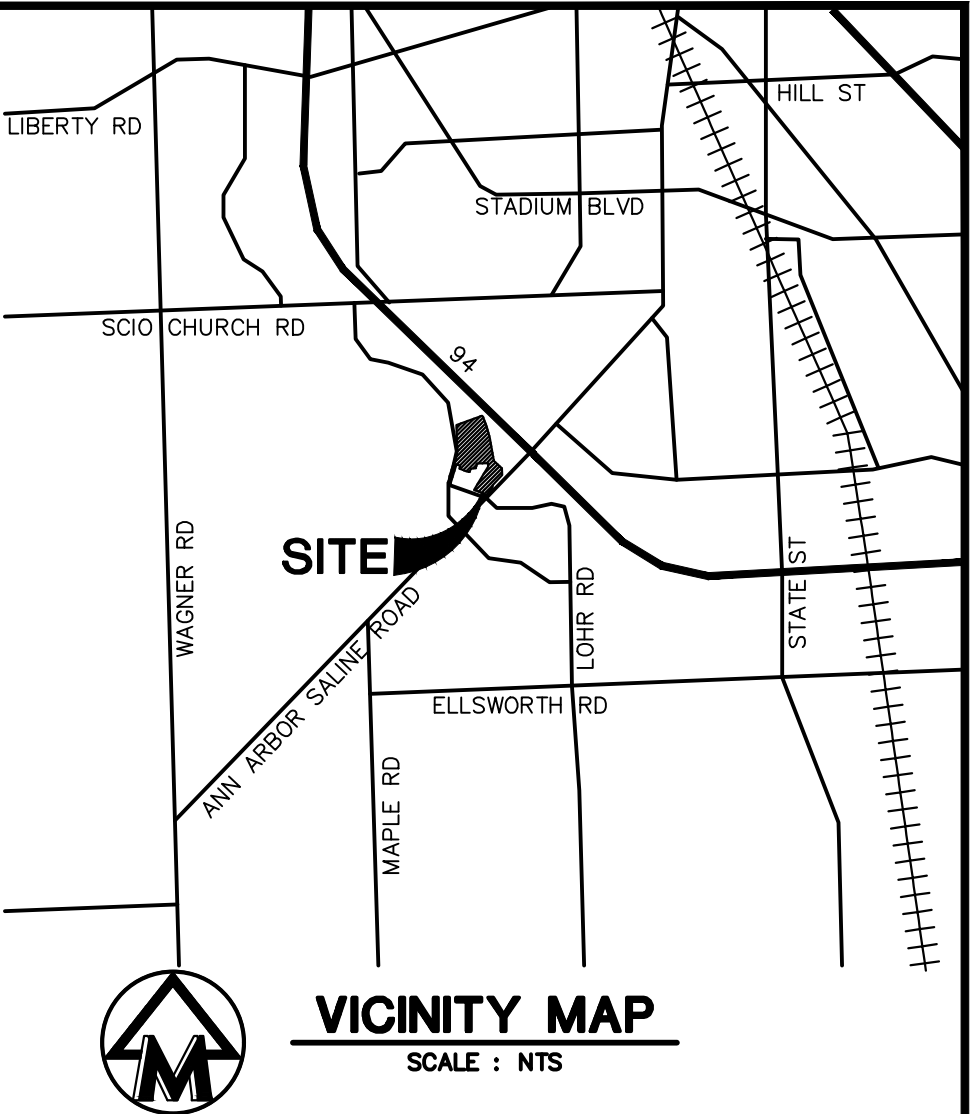
Commencing at the South 1/4 corner of Section 6, Town 3 South, Range 6 East, Pittsfield Township, Washtenaw County, Michigan; Thence North 89 deg. 19' 30" East, 208.97 feet along the South line of said Section 6 for a Place of Beginning; Thence North 32 deg. 04' 00" East, 498.80 feet; Thence North 01 deg. 23' 50" West 95.10 feet; Thence South 88 deg. 36' 10" West, 301.00 feet; Thence South 01 deg. 23' 50" East, 62.00 feet; Thence South 88 deg. 36' 10" West, 20.00 feet; Thence South 01 deg. 23' 50" East, 62.00 feet; Thence South 88 deg. 36' 10" West, 136.66 feet; Thence 26.26 feet along the arc of a 140.00 foot radius non-tangential circular curve to the right, chord bearing South 12 deg. 47' 55" West, 26.22 feet; Thence South 18 deg. 10' 20" West, 68.66 feet; Thence North 71 deg. 49' 40" West, 123.04 feet; Thence North 18 deg. 10' 20" East, 8.00 feet; Thence North 71 deg. 49' 40" West, 122.44 feet; Thence North 18 deg. 10' 20" East, 85.69 feet; Thence North 71 deg. 49' 40" West, 107.56 feet; Thence South 18 deg. 10' 20" West, 506.26 feet; Thence along the Northerly Right of Way line of Waters Road (66 feet wide) 53.86 feet along the arc of a 633.00 foot radius non-tangential circular curve to the left, chord bearing North 85 deg. 11' 33" West, 53.84 feet; Thence along the Easterly Right of Way line of Oak Valley Drive (86 feet wide) the following 5 courses: North 01 deg. 04' 40" West 6.26 feet, 153.54 feet along the arc of a 457.00 foot radius circular curve to the right, chord bearing North 08 deg. 32' 50" East, 152.82 feet, North 18 deg. 10' 20" East, 542.34 feet, 287.93 feet along the arc of an 843.00 foot radius circular curve to the left, chord bearing North 08 deg. 23' 15" East, 286.53 feet and North 01 deg. 23' 50" West, 541.70 feet; Thence North 69 deg. 59' 26" East, 708.84 feet; Thence along the Southwesterly Right of Way line of Interstate - 94 Expressway (variable width) along the following 9 Courses: South 40 deg. 34' 53" East, 39.01 feet, South 20 deg. 00' 34" East, 254.93 feet, South 15 deg. 38' 50" East, 314.96 feet, South 09 deg. 41' 15" East,

621.59 feet, South 47 deg. 18' 05" East, 274.31 feet, South 02 deg. 18' 05" East, 176.78 feet, South 42 deg. 41' 55" West, 367.27 feet, South 00 deg. 40' 30" East, 58.97 feet and South 42 deg. 33' 53" West, 293.57 feet; Thence along the Northerly Right of Way line of Waters Road (66 feet wide) the following 3 courses: North 47 deg. 26' 07" West, 64.52 feet, 153.85 feet along the arc of a 368.00 foot radius circular curve to the left, chord bearing North 59 deg. 28' 39" West, 152.72 feet, and North 71 deg. 31' 10" West, 115.92 feet; Thence North 32 deg. 04' 00" East, 211.12 feet to the Place of Beginning.

LESS AND EXCEPT THE FOLLOWING:

Commencing at the South 1/4 corner of Section 6, Town 3 South, Range 6 East, Pittsfield Township, Washtenaw County, Michigan; Thence North 89 deg. 19' 30" East, 645.45 feet along the South line of said Section 6 and the centerline of Waters Road, as originally established; Thence along the Southwesterly line of Interstate-94 Expressway the following 7 courses: North 42 deg. 41' 55" East, 278.38 feet, North 02 deg. 18' 05" West, 176.78 feet, North 47 deg. 18' 05" West, 274.31 feet, North 09 deg. 41' 15" West, 621.59 feet, North 15 deg. 38' 50" West, 314.96 feet, North 20 deg. 00' 34" West, 254.93 feet and North 40 deg. 34' 53" West, 39.01 feet; Thence South 69 deg. 59' 26" West, 225.48 feet; Thence South 20 deg. 00' 34" East, 36.00 feet for a Place of Beginning; Thence North 69 deg. 59' 26" East, 90.00 feet; Thence South 20 deg. 00' 34" East, 114.00 feet; Thence South 69 deg. 59' 26" West, 90.00 feet; Thence North 20 deg. 00' 34" West, 114.00 feet to the Place of Beginning.

Together with the non-exclusive easements, being more fully described in Operating and Easement Agreement at Recording No. Liber 2367, Page 571, and Amendment thereto at Recording No. Liber 2375, Page 244.



#### SHEET INDEX


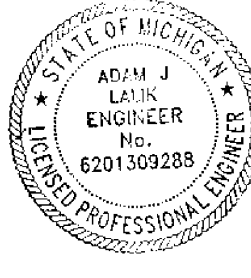
#	SHEET TITLE
01	COVER SHEET
02	EXISTING CONDITIONS AND REMOVALS PLAN
03	LAYOUT PLAN
04	UTILITY PLAN
05	GRADING AND SOIL EROSION CONTROL PLAN
06	STORMWATER MANAGEMENT PLAN
07	FIRE PROTECTION PLAN
08	LANDSCAPE PLAN
09	LANDSCAPE DETAILS
10	SITE DETAILS
11	SANITARY SEWER DETAILS
12	SANITARY SEWER SPECIFICATIONS
13	STORM SEWER DETAILS AND SPECIFICATIONS
14	WATER MAIN DETAILS
15	WATER MAIN SPECIFICATIONS
16	SOIL EROSION DETAILS AND NOTES
17	EARTHWORK SPECIFICATIONS
18	PHOTOMETRIC PLAN
19	PHOTOMETRIC DETAILS
A-1	BUILDING ELEVATIONS AND FLOOR PLANS

#### PROJECT NARRATIVE

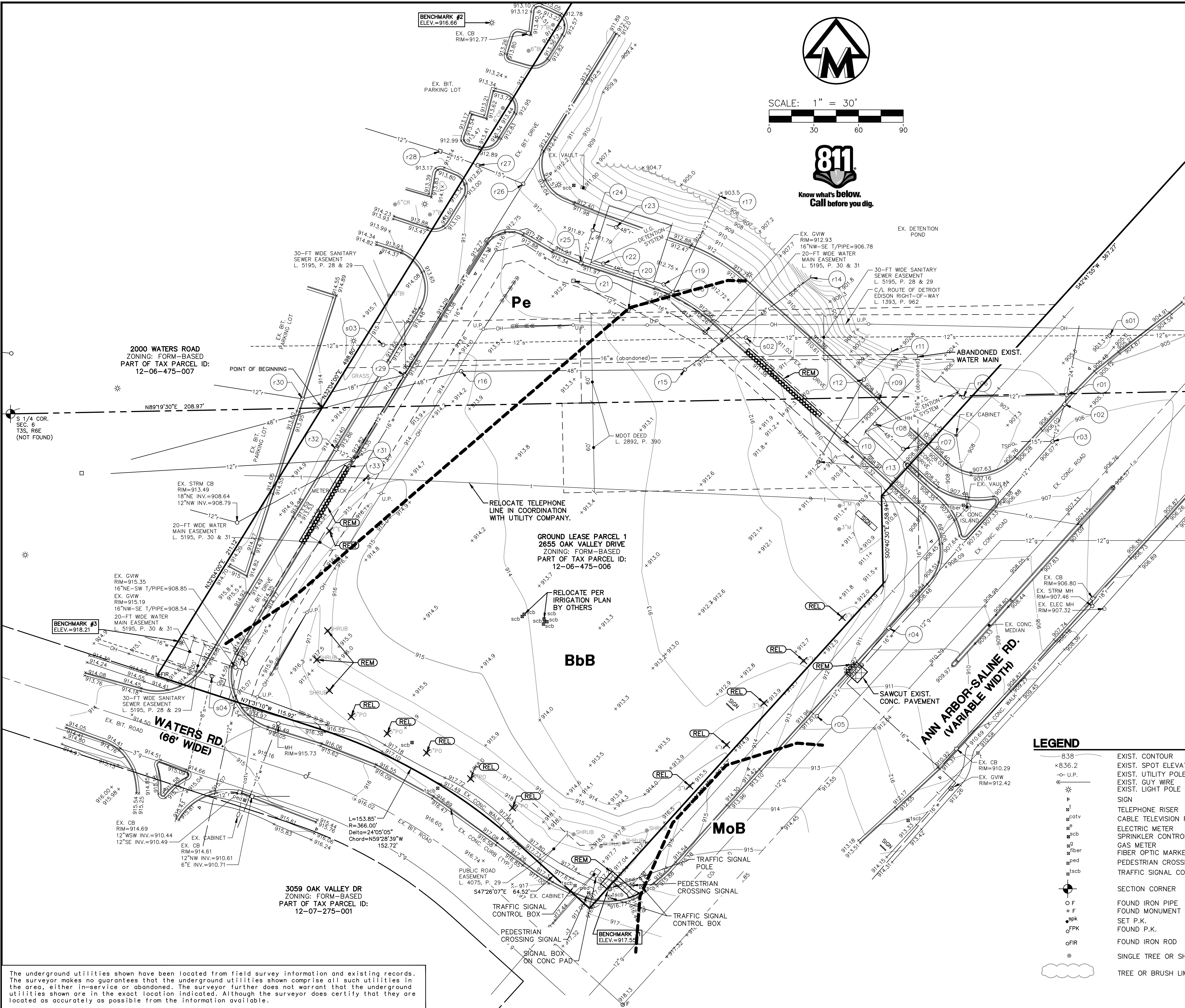
THE APPLICANT PROPOSES ONE NEW OFFICE / INSTITUTIONAL BUILDING ON THE APPROXIMATELY 2.2 ACRE OUTLOT AT ANN ARBOR SALINE AND WATERS ROAD. THE TENANT SPACES WILL BE SERVED BY ON-SITE PARKING WITH TWO ACCESS DRIVEWAYS. THE INFRASTRUCTURE HAS BEEN DESIGNED TO SERVE ONE ADDITIONAL BUILDING IN A FUTURE PHASE.

THE SITE IS SERVED BY AN UNDERGROUND STORMWATER MANAGEMENT SYSTEM THAT OUTLETS TO THE EXISTING WETLAND LOCATED TO THE NORTHEAST. NATURAL FEATURES ON THE SITE ARE NEGLIGIBLE AND THE EXISTING TREES THAT ARE LOCATED ON THE SITE ARE PROPOSED TO BE TRANSPLANTED TO ALLOW FOR THE NECESSARY EARTHWORK THAT IS PROPOSED.

## OAK VALLEY OUTLOT

JOB No. <b>22095</b>	DATE: 12/13/22	<b>01</b>
REVISIONS:	SHEET 01 OF 20	
TOWNSHIP REVIEW	04/18/23 CADD: CTS	
MUNICIPAL REVIEW	06/15/23 ENG: TPH	
	PM: KEB	
	TECH: PRELIM/22095CV1	
	FB:	
		
3815 Plaza Drive Ann Arbor, Michigan 48108 (734) 995-0200 • www.midwesternconsulting.com Land Development • Land Survey • Institutional • Municipal Wireless Communications • Transportation • Landfill Services		
RELEASED FOR:	DATE	
OAK VALLEY OUTLOT C.S.P.A. 22-45		P.E. #

Midwestern Consulting L.L.C. 22095 PRELIMINARY SITE PLAN, WELLS, PDF, 4/23



**NOTES**

1. THE BASE SURVEY WAS PREPARED BY MIDWESTERN CONSULTING IN APRIL 2022. ALL UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN SHOWN TO A REASONABLE DEGREE OF ACCURACY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.

**BENCHMARKS**

BENCHMARK #1: WEST SIDE OF CONCRETE BASE OF LIGHT POLE/TRAFFIC SIGNAL POLE LOCATED AT THE NORTHWEST CORNER OF WATERS ROAD AND ANN ARBOR - SALINE ROAD. ELEVATION = 917.55' (NAVD88)

BENCHMARK #2: MAG NAIL IN THE SOUTHWEST SIDE OF CONCRETE BASE OF A LIGHT POLE LOCATED IN THE PARKING LOT WEST OF THE DETENTION POND ±127 FEET. ELEVATION = 916.66' (NAVD88)

BENCHMARK #3: MAG NAIL IN THE EAST SIDE OF CONCRETE BASE OF A LIGHT POLE LOCATED AT THE NORTHWEST CORNER OF WATERS ROAD AND THE SOUTHWEST ENTRANCE TO THE SHOPPING AREA. ELEVATION = 918.21' (NAVD88)

EXISTING STORM STRUCTURE TABLE			
STR#	DESCRIPTION	RIM	INVERTS
r01	MANHOLE (FULL OF WATER)	906.18	12"W INV.=899.78 12"SW INV.=899.63 24"NNE INV.=899.43
r02	CATCH BASIN (FULL OF WATER)	905.70	B/STRUCT.=900.00 12"NE INV.=900.98 12"SW INV.=900.58
r03	MANHOLE	906.03	12"SW INV.=901.58 12"NE INV.=900.03
r04	CATCH BASIN	906.38	12"NE-SW INV.=901.78
r05	MANHOLE	911.66	UNABLE TO OPEN
r06	MANHOLE	907.35	12"NW INV.=900.95 12"E INV.=900.60
r07	MANHOLE	908.96	48"NE-SW INV.=901.51
r08	MANHOLE	908.78	48"NE-SW INV.=901.58
r09	CATCH BASIN	908.38	T/METAL RIM=905.03 12"NE INV.=904.58 B/STRUCT.=901.58
r10	MANHOLE	908.41	12"NE INV.=902.76
r11	END SECTION	909.23	12"NE INV.=902.93 12"SW INV.=903.83
r12	MANHOLE	911.18	12"NE INV.=904.58
r13	END SECTION	908.78	48"SW INV.=900.49
r14	MANHOLE	912.79	48"NE INV.=900.39
r15	MANHOLE	912.79	48"SW INV.=900.28 48"E INV.=900.63
r16	MANHOLE	914.28	12"SE INV.=903.99
r17	END SECTION	912.75	12"NW INV.=904.30 12"NE INV.=907.85 12"NE INV.=904.45
r18	MANHOLE	912.67	12"NW INV.=904.12 12"SE INV.=904.37
r19	MANHOLE	912.62	12"NW INV.=908.17 12"NE INV.=908.17
r20	MANHOLE	912.32	12"SE INV.=908.92
r21	CATCH BASIN	911.77	48"NW-SE INV.=904.32
r22	MANHOLE	911.93	48"NW-SE INV.=904.28
r23	MANHOLE	911.76	T/METAL RIM=910.46 T/METAL INV.=909.96 B/STRUCT.=902.66
r24	MANHOLE	911.48	12"NE INV.=907.68
r25	CATCH BASIN	911.88	24"SW INV.=906.23 24"NE INV.=906.23 15"NW INV.=906.46
r26	MANHOLE	912.59	15"SE INV.=907.39
r27	CATCH BASIN	912.88	15"SE INV.=907.39
r28	CATCH BASIN	912.88	12"NW INV.=908.08 12"SW INV.=907.31
r29	CATCH BASIN	912.96	18"WSW INV.=906.96 24"NE INV.=906.86
r30	CATCH BASIN	913.32	18"NE INV.=908.87 12"NW INV.=908.97 12"SW INV.=908.27
r31	CATCH BASIN	912.77	12"NW INV.=908.67 12"W INV.=907.92 12"NE INV.=907.82
r32	CATCH BASIN	912.79	12"SE INV.=909.34
r33	CATCH BASIN	912.74	12"NE INV.=908.29

EXISTING SANITARY STRUCTURE TABLE			
STR#	DESCRIPTION	RIM	INVERTS
s01	MANHOLE	903.94	12"W INV.=891.99 12"E INV.=891.84
s02	MANHOLE	912.19	12"E INV.=892.64 12"W INV.=892.64
s03	MANHOLE	914.44	12"E INV.=896.99 12"W INV.=897.04
s04	MANHOLE	914.23	8"NW INV.=902.73 8"SW INV.=902.78

LEGEND	
8.38	EXIST. CONTOUR
x836.2	EXIST. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
W	EXIST. GUY WIRE
L	EXIST. LIGHT POLE
+	SIGN
+	TELEPHONE RISER
+	CABLE TELEVISION RISER
+	ELECTRIC METER
+	SPRINKLER CONTROL BOX
+	GAS METER
+	FIBER OPTIC MARKER
+	PEDESTRIAN CROSSING SIGNAL
+	TRAFFIC SIGNAL CONTROL BOX
+	SECTION CORNER
+	FOUND IRON PIPE
+	FOUND MONUMENT
+	SET P.K.
+	FOUND P.K.
+	FOUND IRON ROD
+	SINGLE TREE OR SHRUB
+	TREE OR BRUSH LIMIT
+	EXIST. OVERHEAD UTILITY LINE
+	EXIST. TELEPHONE LINE
+	EXIST. ELECTRIC LINE
+	EXIST. FIBER OPTIC LINE
+	EXIST. WATER MAIN
+	EXIST. GATE VALVE IN WELL
+	EXIST. STORM SEWER
+	EXIST. CATCH BASIN OR INLET
+	EXIST. END SECTION
+	EXIST. SANITARY SEWER
+	BIRCH
+	CRABAPPLE
+	ELM
+	MAPLE
+	POPLAR
+	CONCRETE TO BE REMOVED
+	BITUMINOUS TO BE REMOVED
+	UTILITY TO BE ABANDONED
+	CURB TO BE REMOVED
+	TREE TO BE REMOVED
+	ITEM TO BE RELOCATED
+	ITEM TO BE REMOVED

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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CLIENT

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6735 TELEGRAPH ROAD, SUITE 110  
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FRED GOLDBERG

OAK VALLEY OUTLOT

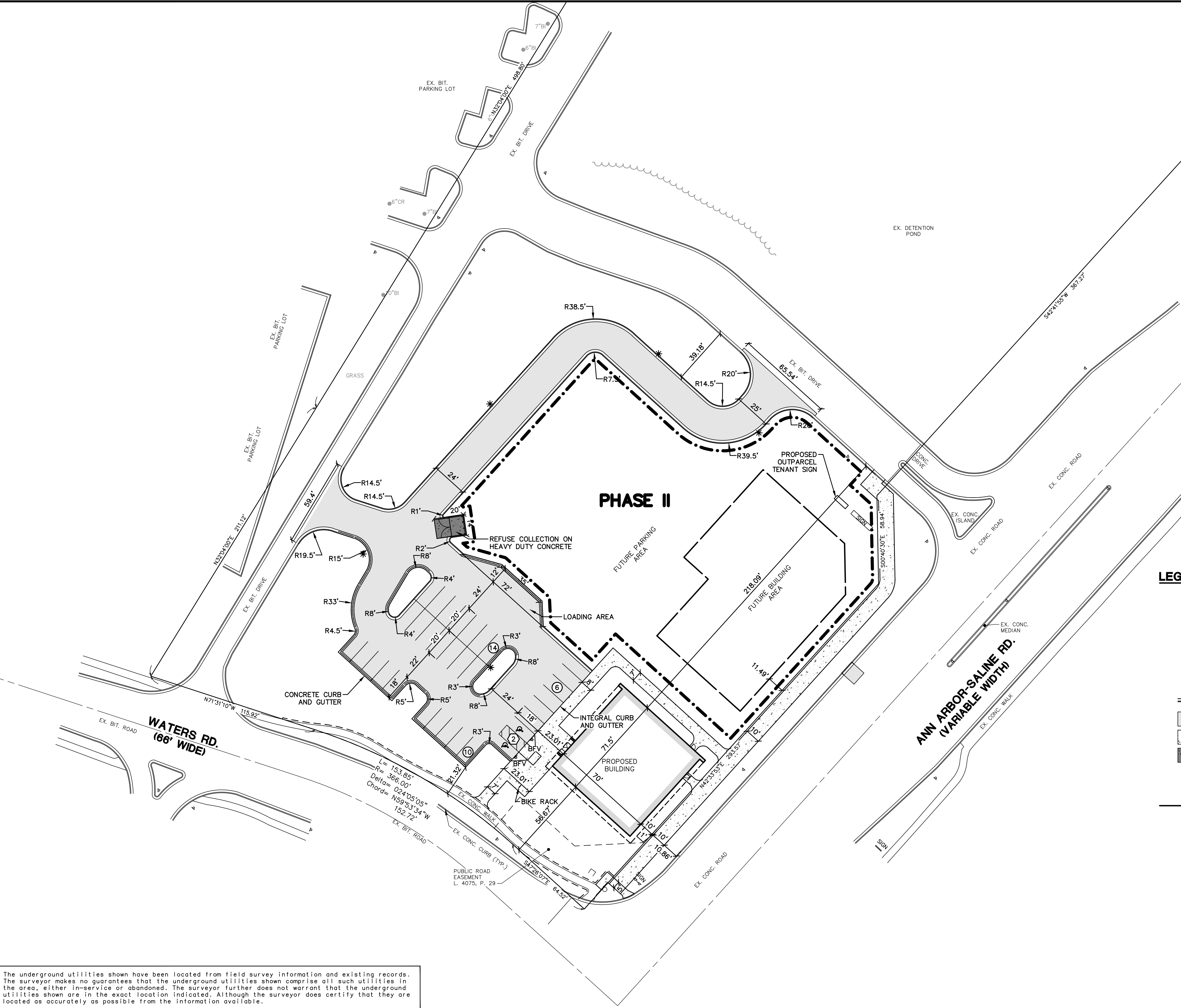
PRELIMINARY SITE PLAN  
EXISTING CONDITIONS AND REMOVALS PLAN

22095

DATE: 12/13/22  
SHEET 02 OF 20  
REV. DATE: 05/18/23  
TOWNSHIP REVIEW

REVISIONS:  
CADD: CTS  
ENG: TPH  
PM: KEB  
TECH: KEB  
JLM/J2005MKT  
FB

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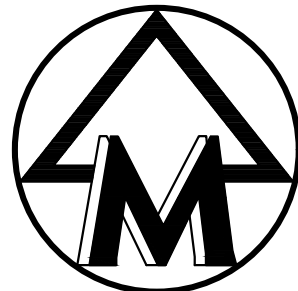


#### NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH CURRENT STANDARDS, SPECIFICATIONS, AND GENERAL CONDITIONS OF THE AUTHORITY HAVING JURISDICTION.
2. REFER TO THE ARCHITECTURAL PLANS FOR DETAILS REGARDING THE SCOPE OF WORK FOR THE BUILDING ELEVATIONS, INTERIORS, AND APPURTENANCES.
3. DIMENSIONS ARE MEASURED TO THE PAINT LINE OR FACE OF CURB UNLESS OTHERWISE NOTED. RADIAL DIMENSIONS ARE MEASURED FROM THE BACK OF CURB.
4. THE CONTRACTOR SHALL CONTACT THE OWNER AND/OR ENGINEER PRIOR TO COMMENCING WORK SHOULD THERE BE ANY FIELD CONFLICTS WITH THE DESIGN INTENT.
5. THE FINANCIAL INSTITUTION WILL TAKE AS-NEEDED DELIVERIES FOR NORMAL OFFICE SUPPLIES FROM A SU-30 DELIVERY TRUCK, BEING THE LARGEST DELIVERY TRUCK USED FOR THIS SITE, ON AN AS-NEEDED BASIS FOR OFFICE SUPPLIES WHICH IS TYPICALLY MONTHLY AND WILL OCCUR DURING BUSINESS HOURS.

#### LEGEND

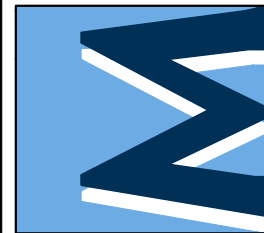
- ① NUMBER OF STANDARD PARKING SPACES IN ROW
- ② NUMBER OF SMALL CAR PARKING SPACES IN ROW
- ③ NUMBER OF BARRIER FREE PARKING SPACES IN ROW
- BF BARRIER FREE PARKING SIGN
- BFV VAN ACCESSIBLE BARRIER FREE PARKING SIGN
- R BARRIER FREE SIDEWALK RAMP
- PROP. CURB & GUTTER
- PROP. BITUMINOUS PAVEMENT
- PROP. CONCRETE PAVEMENT
- PROP. HEAVY DUTY CONCRETE
- SIGN (BF – BARRIER FREE, BHV – BARRIER FREE VAN)
- PROP. SINGLE LIGHT
- PROP. DOUBLE LIGHT
- PROP. DOUBLE LIGHT



SCALE: 1" = 30'



**MIDWESTERN CONSULTING**  
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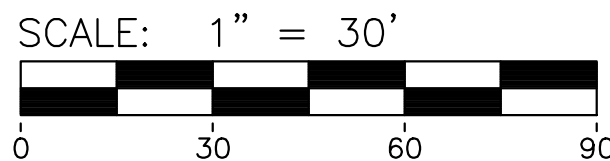
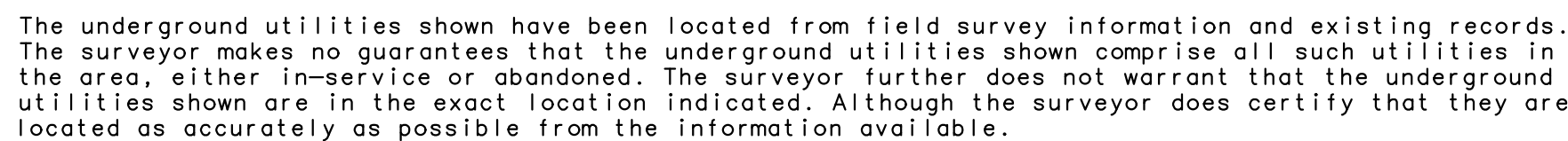
**CLIENT**  
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6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG

**OAK VALLEY OUTLOT**  
PRELIMINARY SITE PLAN  
LAYOUT PLAN

**03**

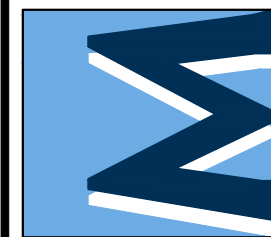
JOB No.	22095	DATE: 12/13/22
REV. No.	03	SHEET 03 OF 20
REVISIONS:	REV. DATE: 06/18/23	CADD: QTS
TOWNSHIP REVIEW	06/15/23	ENG: TPH
MUNICIPAL REVIEW		ENG: KEB
		TECH: KEB
		PLM/22095SP1
		FR:

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1. ALL PROPOSED SANITARY SEWER SHALL BE SDR 26 PVC UNLESS OTHERWISE NOTED.
2. ALL PROPOSED STORM SEWER SHALL BE C76 CLASS IV RCP UNLESS OTHERWISE NOTED.
3. ALL PROPOSED WATER MAIN OR SERVICE LEADS 4" AND LARGER SHALL BE CLASS 54 OR PC 350 DUCTILE IRON, DOUBLE CEMENT LINED, WITH POLYBUTYLENE AND TRACER WIRE AND PUSH ON JOINTS. 1", 1.5" OR 2" WATER SERVICE LEADS SHALL BE TYPE K COPPER OR BLUE POLYETHYLENE WITH TRACER WIRE.
5. ALL PROPOSED WATER MAIN SHALL MAINTAIN A TYPICAL BURY DEPTH OF 8.5 FEET.

—○— U.P.	EXIST. UTILITY POLE
—◇— U.P.	EXIST. UTILITY POLE W/ TRANS.
—GP	EXIST. GUY POLE
—	GUY WIRE
—  —	ELEC. TRANSFORMER
—  —	EXIST. AC UNIT
—  —	EXIST. GENERATOR
—OH—	EXIST. OVERHEAD UTILITY LINE
—  —	EXIST. LIGHT POLE
—  —	PROP. LIGHT POLE
—  —	PROP. BUILDING LIGHT
—t—	EXIST. TELEPHONE LINE
—T—	PROP. TELEPHONE LINE
—e—	EXIST. ELECTRIC LINE
—E—	PROP. ELECTRIC LINE
—g—	EXIST. GAS LINE
—G—	PROP. GAS LINE
—g—  —	EXIST. GAS VALVE
—f.o.—	EXIST. FIBER OPTIC LINE
—F.O.—	PROP. FIBER OPTIC LINE
—w—	EXIST. WATER MAIN
—W—	PROP. WATER MAIN
—  —	EXIST. HYDRANT
—  —	PROP. HYDRANT
—  —	EXIST. GATE VALVE IN BOX
—  —	PROP. GATE VALVE IN BOX
—  —	EXIST. GATE VALVE IN WELL
—  —	PROP. GATE VALVE IN WELL
—x—	EXIST. CURB STOP & BOX
—x—	PROP. CURB STOP & BOX
—	REDUCER
—  —	EXIST. BLOW-OFF
—  —	PROP. BLOW-OFF
—  —	POST INDICATOR VALVE
—  —	POST INDICATOR VALVE
—  —	THRUST BLOCK
—  —	EXIST. FIRE DEPARTMENT CONNECTION
—  —	PROP. FIRE DEPARTMENT CONNECTION
—  —	PROP. KNOXBOX
—r—  —	EXIST. STORM SEWER
—R—  —	PROP. STORM SEWER
—  —	EXIST. CATCH BASIN OR INLET
—  —	PROP. CATCH BASIN OR INLET
—  —	EXIST. BEEHIVE INLET
—  —	PROP. BEEHIVE INLET
—RD—	PROP. ROOF DRAIN
—)	END SECTION
—)	HEAD WALL
—	CULVERT
—ds	EXIST. DOWNSPOUT
—ds	PROP. DOWNSPOUT
—s—  —	EXIST. SANITARY SEWER
—S—  —	PROP. SANITARY SEWER
—  —	EXIST. CLEANOUT
—  —	PROP. CLEANOUT
—  —	TELEPHONE RISER
—  —	CABLE TELEVISION RISER
—  —	ELECTRIC METER
—  —	WATER METER
—  —	SPRINKLER CONTROL BOX
—  —	GAS METER
—  —	GAS LINE MARKER
—  —	FIBER OPTIC MARKER
—  —	PEDESTRIAN CROSSING SIGNAL
—  —	TRAFFIC SIGNAL CONTROL BOX
—  —	WELL
—  —	EXIST. SPRINKLER HEAD
—  —	EXIST. GAS FILLER CAP
—vcs	EXIST. VEHICLE CHARGING STATION
—  —	PROP. VEHICLE CHARGING STATION



\\C:\Users\j34\OneDrive\Documents\22095GP1.dwg, 6/16/2023 9:34 AM, Kara J. Vuich, 05 GRADING AND SOIL EROSION CONTROL PLAN, MLLC PDF .p3  
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## SESC NOTES

1. ALL SOIL EROSION CONTROL MEASURES SHALL COMPLY WITH THE PITTSFIELD TOWNSHIP ORDINANCES, WASHTENAW COUNTY STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND STATE OF MICHIGAN "SOIL EROSION AND SEDIMENTATION CONTROL ACT" (ACT #347).
2. PRIOR TO COMMENCING EARTHMOVING OPERATIONS, THE GRADING CONTRACTOR SHALL INSTALL THE MUD TRACKING MAT, THE SILT FENCE AND TEMPORARY INLET FILTER(S) SHOWN ON THE PLANS.
3. ANY LAWN AREA WHICH WILL HAVE A SLOPE STEEPER THAN 6:1 (6 FT. MEASURED HORIZONTALLY AND 1 FT. MEASURED VERTICALLY) SHALL BE SODDED AND PEGGED OR SEEDED AND MULCHED USING A SOIL EROSION CONTROL FABRIC OR BLANKET. HYDROSEEDING MAY BE USED IN LIEU OF SEED AND MULCH OR SOD WHERE SLOPES ARE FLATTER THAN 6:1.
4. THE ACTUAL LOCATION OF THE MUD TRACKING MATS MAY BE ADJUSTED BY THE CONTRACTOR TO MATCH CONTRACTOR'S OPERATIONS AND FIELD CONDITIONS BUT ONLY IF APPROVED BY THE ENGINEER.
5. ALL DISTURBED AREAS, EVEN WHERE FUTURE PAVEMENT IS PROPOSED, ARE TO BE REVEGETATED PER COUNTY STANDARDS FOR TEMPORARY SEEDING.
6. BOTH INTERNAL AND EXTERNAL STREETS WILL BE CLEANED OF ANY MUD IMMEDIATELY FOLLOWING EACH MUD TRACKING OCCURRENCE.
6. ALL EXPOSED EARTH SHALL BE STABILIZED WITH SEED AND MULCH WITHIN 5 DAYS OF FINAL GRADE. SEDIMENT BASINS SHALL BE STABILIZED WITH SEED AND STRAW MULCH BLANKETS. STRAW MULCH BLANKETS SHALL BE STAKED INTO THE GROUND 5 DAYS AFTER THE CONSTRUCTION OF THE SEDIMENT BASIN.
7. DRAINAGE FROM NEW IMPERVIOUS AREA IS TO BE DIRECTED TO THE ON-SITE STORM WATER MANAGEMENT SYSTEM.
8. DITCHES, SWALES, AND OTHER AREAS THAT WILL CHANNEL CONCENTRATED RUNOFF MUST BE STABILIZED WITHIN 15 DAYS OF CONSTRUCTION.
9. ROAD RIGHT-OF-WAYS MUST BE STABILIZED WITH SEED AND MULCH WITHIN 5 DAYS OF COMPLETING UTILITY WORK IN THE RIGHT OF WAY.
10. AREAS OF EARTH CHANGE THAT ARE DISTURBED BEYOND THE FALL SEEDING DEADLINE (NOV. 1) MUST BE TEMPORARILY STABILIZED WITH A MINIMUM OF STRAW MULCH SECURELY CRIMPED TO THE GROUND.

## NOTES

1. GRADES AT ADA ACCESS AISLES AND BARRIER FREE PARKING STALLS SHALL NOT EXCEED 2.0% SLOPE.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE DURING AND AFTER CONSTRUCTION, AND NO ADVERSE IMPACTS WILL OCCUR TO NEIGHBORING PROPERTIES DURING OR AFTER COMPLETION OF CONSTRUCTION.
3. ALL STORM SEWER AND UTILITY STRUCTURE RIMS SHALL BE FLUSH WITH PAVEMENT OR FINISHED GRADE.
4. ALL DISTURBED AREAS TO BE RESTORED AS NOTED ON PLAN.

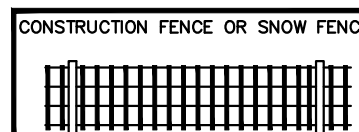
## MAINTENANCE REQUIREMENTS

1. ALL SILT FENCE SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. IF AT ANY TIME THE DEPTH OF SILT AND SEDIMENT COMES TO WITHIN 12" OF THE TOP OF ANY SILT FENCE, ALL SILT AND SEDIMENT SHALL BE REMOVED TO ORIGINAL GRADE.
2. ONLY UPON STABILIZATION OF ALL DISTURBED AREAS MAY THE SILT FENCE, AND TEMPORARY GRAVEL FILTERS BE REMOVED. ALSO, ALL STORM SEWERS MUST BE CLEANED OF ALL SEDIMENT.

## SOIL EROSION CONTROL MEASURES

t = temporary p = permanent

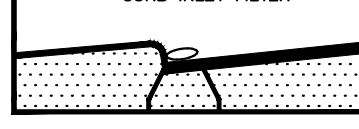
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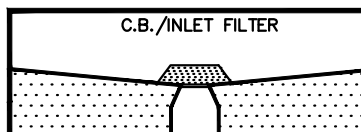
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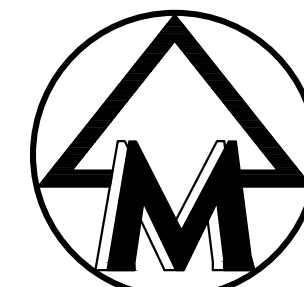
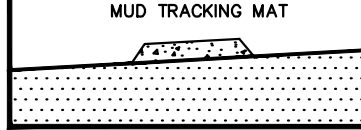
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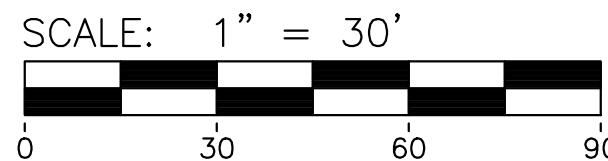
59



60



Know what's below.  
Call before you dig.



## LEGEND

838	EXIST. CONTOUR
838	PROP. CONTOUR
836.2	EXIST. SPOT ELEVATION
36.60	PROP. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
U.P.	EXIST. UTILITY POLE W/ TRANS.
GUY WIRE	GUY WIRE
OH	EXIST. OVERHEAD UTILITY LINE
*	EXIST. LIGHT POLE
t	PROP. LIGHT POLE
e	EXIST. TELEPHONE LINE
g	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
w	PROP. WATER MAIN
+	EXIST. HYDRANT
+	PROP. HYDRANT
+	EXIST. GATE VALVE IN BOX
+	PROP. GATE VALVE IN BOX
+	EXIST. GATE VALVE IN WELL
+	PROP. GATE VALVE IN WELL
x	EXIST. CURB STOP & BOX
x	PROP. CURB STOP & BOX
+	REDUCER
KB	PROP. KNOXBOX
+	EXIST. FIRE DEPARTMENT CONNECTION
+	PROP. FIRE DEPARTMENT CONNECTION
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
+	EXIST. CATCH BASIN OR INLET
+	PROP. CATCH BASIN OR INLET
+	EXIST. BEEHIVE INLET
+	PROP. BEEHIVE INLET
+	PROP. ROOF DRAIN
+	END SECTION
+	HEAD WALL
+	CULVERT
+	EXIST. DOWNSPOUT
+	PROP. DOWNSPOUT
+	EXIST. SANITARY SEWER
+	PROP. SANITARY SEWER
+	EXIST. CLEANOUT
+	PROP. CLEANOUT
+	C/L OF DITCH
+	DRAINAGE DIRECTION
+	SIGN
+	SINGLE TREE
+	TREE OR BRUSH LIMIT
+	FENCE
+	SILT FENCE
+	LIMITS OF DISTURBANCE
+	CONSTRUCTION FENCE
+	FF
+	FINISH FLOOR ELEVATION

## STORMWATER SYSTEM MAINTENANCE PLAN

1. Responsibility for Maintenance:
  - a. During construction, it is the contractor's responsibility to perform maintenance.
  - b. Following construction, it will be the responsibility of the owner to perform maintenance.
2. Maintenance Tasks and Schedule:
  - a. See the chart on this sheet. The chart describes maintenance tasks to be performed.
  - b. Immediately following construction, the developer will have the stormwater management system inspected by an engineer to verify grades of the infiltration basin and make recommendations for any necessary sediment removal.
3. Notes:
  - a. No chemicals are allowed in stormwater features or buffer zones with the following exception: invasive species may be treated with chemicals by a certified applicator.
  - b. Mowing is only allowed twice per year.

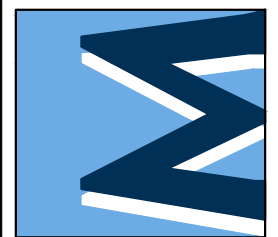
### Maintenance Plan Budget

Annual inspection for sediment accumulation	\$100.00
Removal of sediment accumulation every 2 years as needed	\$500.00
Inspect for floatables and debris annually and after major storms	\$100.00
Removal of floatables and debris annually and after major storms	\$250.00
Inspect system for erosion annually and after major storms	\$100.00
Re-establish permanent vegetation on eroded slopes as needed	\$350.00
Replacement of stone	\$100.00
Inspect structural elements during wet weather and compare to as-built plans every 2 years	\$150.00
Make structural adjustments or replacements as determined by inspection as needed	\$400.00
Have a professional engineer carry out emergency inspections upon identification of severe problems	\$200.00
<b>Total Annual Budget</b>	<b>\$2,250.00</b>

PERMANENT MAINTENANCE TASKS AND SCHEDULE									
TASKS	Streets	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Casings	Ditches & Swales	Outflow Control Structures	Filtration Basins	Storm Detention Areas	Emergency Overflow
Inspect for sediment accumulation		X	X		X	X	X	X	annually
Removal of sediment accumulation		X	X		X	X	X	X	every 2 yrs as needed
Inspect for floatables and debris				X	X	X	X	X	annually
Cleaning of floatables and debris				X	X	X	X	X	as needed
Clean Streets	X								semi-annually
Inspect stormwater system components during wet weather and compare to as-built plans (by professional engineer)		X	X	X	X	X	X	X	annually
Make adjustment or replacements as determined by annual wet weather inspection		X	X	X	X	X	X	X	as needed
Keep records of all inspections and maintenance activities									annually
Keep records of all costs for inspections, maintenance and repairs.									annually

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**MIDWESTERN CONSULTING**  
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Land Development • Land Survey • Institutional • Municipal  
Wireless Communications • Transportation • Landfill Services



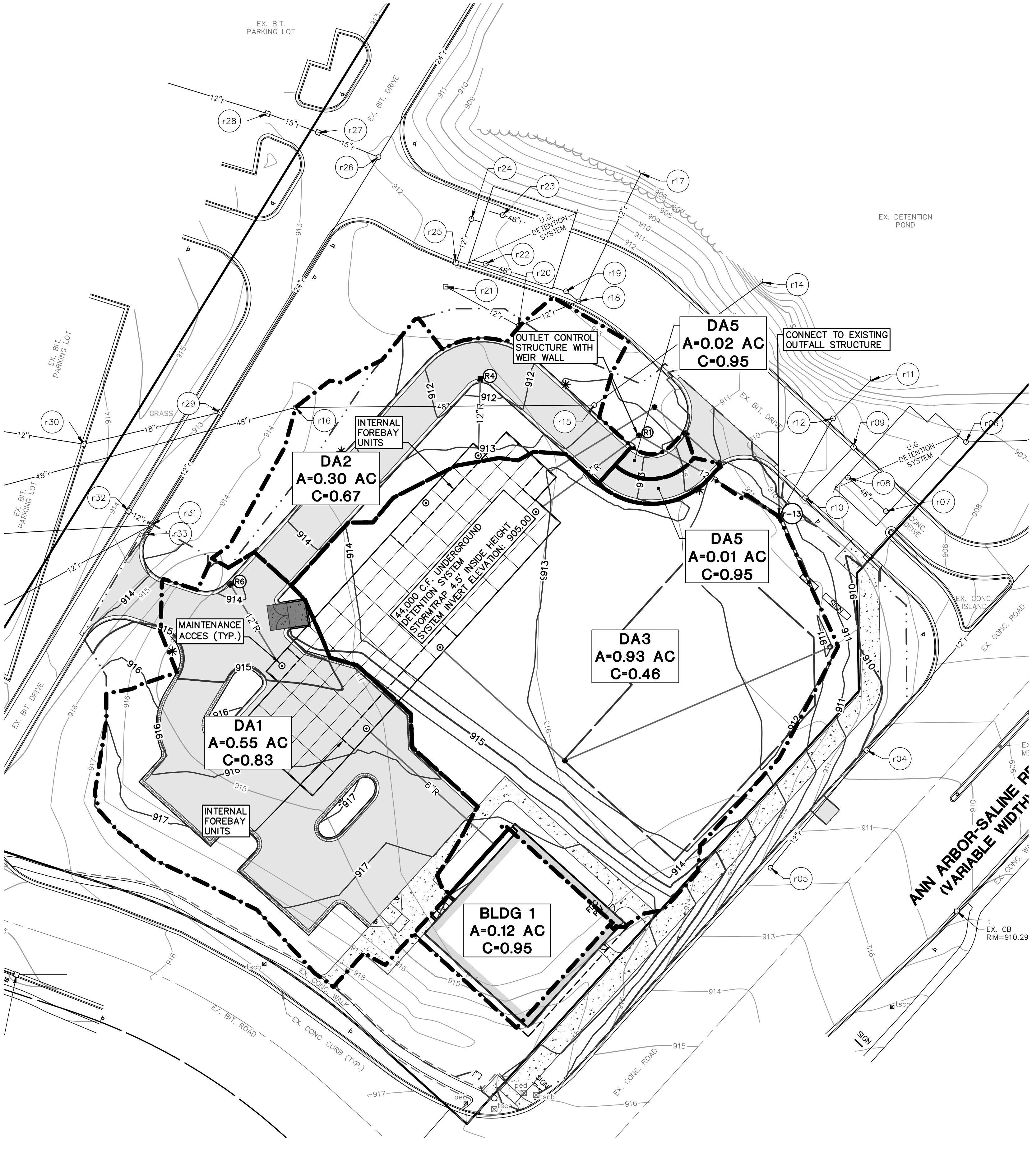
CLIENT  
OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG

**OAK VALLEY OUTLOT**  
PRELIMINARY SITE PLAN  
GRADING AND SOIL EROSION CONTROL PLAN

**05**

JOB No.	22095
DATE	12/13/22
REV. DATE	06/18/23
SHEET	05
OF	20
DESIGNED BY	CADD: CTS
CHECKED BY	ENG: TPH
DATE	06/15/23
PROJECT	PM: KEB
TECH	KEB
PREPARED BY	PRELIM/22095GP1

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## STORMWATER DETENTION CALCULATIONS

Detention Basin Stormwater Calculations

REV 09/13/2022

W1 - Determining Post-Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coeff. (C)	(C) x (Area)
Building/Pavement		30,963	0.71	0.95	0.68
Grass	D	52,532	1.21	0.45	0.54
Total		83,495	1.92		1.22

Weighted C = (Sum(C)x(Area))/(Area Total) = 0.64

NRCS Variables (Pervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Building/Pavement	D	30,963	0.71	80	0.96
Grass	D	52,532	1.21	80	0.96
Total		83,495	1.21		0.96

Weighted CN = (Sum(CN)x(Area))/(Area Total) = 80

NRCS Variables (Impervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN) x (Area)
Building/Pavement		30,963	0.71	98	0.70
Total		30,963	0.71		0.70

Weighted CN = (Sum(CN)x(Area))/(Area Total) = 98

W2 - W2 - First Flush Runoff Calculations (Vrr)

A.  $V_{rr} = 1" \times 1" / 12" \times 43560 \text{ sf/ac} \times A \times C$  where A = 1.92 and where C = 0.64

$V_{rr} = 1" \times 1" / 12" \times 43560 \text{ sf/ac} \times 1.92 \times 0.64 = 4,453 \text{ cf}$

W3 - W3 - Pre-Development Bankfull Runoff Calculations (Vol-pre)

A. 2 year / 24 hour storm event: P = 2.35 in

B. Pre-Development CN: CN = 80

C. Good condition (grass cover > 75%), Type D Soils: S = 2,500 in

D.  $S = (1000 / CN) - 10$ : S = 2,500 in

E.  $Q = [(P-0.25)/2] / [P+0.85]$ : Q = 0.787 in

F. Total Site Area excluding "Self-Crediting" BMPs: 83,495 sf

G. Vol-pre = Q x (1/12) x Area: 5,474 cft

W4 - W4 - Pervious Cover Post-Development Bankfull Runoff Calculations (Vol-post)

A. 2 year / 24 hour storm event: P = 2.35 in

B. Pervious Cover CN From Worksheet 1: CN = 80

C.  $S = (1000 / CN) - 10$ : S = 2,500 in

D.  $Q = [(P-0.25)/2] / [P+0.85]$ : Q = 0.787 in

E. Pervious Cover Area from Worksheet 1: 52,532 sf

F. Vol-post = Q x (1/12) x Area: 3,444 cft

W5 - W5 - Impervious Cover Post-Development Bankfull Runoff Calculations (Vol-imp-post)

A. 2 year / 24 hour storm event: P = 2.35 in

B. Impervious Cover CN From Worksheet 1: CN = 98

C.  $S = (1000 / CN) - 10$ : S = 0.204 in

D.  $Q = [(P-0.25)/2] / [P+0.85]$ : Q = 2.122 in

E. Impervious Cover Area from Worksheet 1: 30,963 sf

F. Vol-imp-post = Q x (1/12) x Area: 5,474 cft

W6 - W6 - Pervious Cover Post-Development 100-Year Runoff Calculations (V100-per-post)

A. 100 year / 24 hour storm event: P = 5.11 in

B. Pervious Cover CN From Worksheet 1: CN = 80

C.  $S = (1000 / CN) - 10$ : S = 2,500 in

D.  $Q = [(P-0.25)/2] / [P+0.85]$ : Q = 2,989 in

E. Pervious Cover Area from Worksheet 1: 52,532 sf

F. V100-per-post = Q x (1/12) x Area: 13,085 cft

W7 - W7 - Impervious Cover Post-Development 100-Year Runoff Calculations (V100-imp-post)

A. 100 year / 24 hour storm event: P = 5.11 in

B. Impervious Cover CN From Worksheet 1: CN = 98

C.  $S = (1000 / CN) - 10$ : S = 0.204 in

D.  $Q = [(P-0.25)/2] / [P+0.85]$ : Q = 4.873 in

E. Impervious Cover Area from Worksheet 1: 30,963 sf

F. Vol-imp-post = Q x (1/12) x Area: 12,574 cft

W8 - Time of Concentration (Tc-hrs)

A. Assume 15-minute minimum time of concentration: Tc = 0.25 hr

W9 - Runoff Summary & On-Site Infiltration Requirement

A. Summary from Previous Worksheets

First Flush Volume (Vff): 4,453 cft

Pre-Development Bankfull Runoff Volume (Vbf-pre): 5,474 cft

Pervious Cover Post-Development Bankfull Volume (Vbf-post): 3,444 cft

Impervious Cover Post-Development Bankfull Volume (Vbf-imp-post): 5,474 cft

Total BF Volume (Vbf-post): 8,919 cft

Pervious Cover Post-Development 100-Year Volume (V100-per-post): 13,085 cft

Impervious Cover Post-Development 100-Year Volume (V100-imp-post): 12,574 cft

Total 100-Year Volume (V100): 25,659 cft

B. Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull Volume

Total Post-Development Bankfull Volume (Vbf-post): 8,919 cft

Pre-Development Bankfull Runoff Volume (Vbf-pre): 5,474 cft

Bankfull Volume Difference: 4,445 cft

Infiltration Requirement (Vinf): 4,444 cft

W10 - Detention/Retention Requirement

A.  $Q_p = 238.6 T_c^{0.82}$ : 743.63 cfs (in x sq. mi)

B. Total Site Area excluding "Self-Crediting" BMPs: 1.92 ac

C.  $Q_{100} = Q_{100-per} + Q_{100-imp}$ : 7,862 in

D. Peak Flow (PF) =  $Q_p \times Q_{100} \times \text{Area} / 640$ : 17,51 cfs

E.  $\Delta = PF - Q_{15} \times \text{Area (ac)}$ : 17,22 cfs

F.  $V_{inf} = \Delta / PF \times V_{100}$ : 0.29 cfs

Required Detention Not including infiltration credit or penalty: 25,237 cft

Sediment Forebay Volume Required (5% of V100): 1,283 cft

W11 - Site Summary of Infiltration & Detention

A. Stormwater Management Summary

Min Infiltration Requirement (Vinf): 4,453 cft

Designed/Provided Infiltration Volume: 0 cft

% Minimum Required Infiltration Provided: 0 %

Total Calculated Detention Volume, Vdet: 25,237 cft

Net Required Detention Volume: 25,237 cft

(Vdet - Designed/Provided Infiltration Volume)

B. Detention Volume Increase for sites where the required infiltration volume cannot be achieved.

% Required Infiltration NOT Provided: 100.0 %

(100% - % Minimum Required Infiltration Provided)

Net % Penalty (20% x % Required Infiltration NOT Provided): 20.0 %

Total Required Detention Volume, including penalty: 30,285 cft

[(100% + Net % Penalty) x Net Required Detention Volume]

Detention Outlet Calculations

A. Required Detention Volumes (Reduced by 6-hour infiltration)

Storm Event	Reqd Volume	less	Infl. Credit	=	Final Volume
First Flush	4,453 cft	-	0 cft	=	4,453 cft
Bankfull	8,919 cft	-	0 cft	=	8,919 cft
100-year	25,237 cft	-	0 cft	=	25,237 cft
100-year + Req'd Penalty	30,285 cft	-	0 cft	=	30,285 cft
Forebay Volume Required (5% of 100-yr)				=	1,262 cft

B. Detention Volumes Provided

Underground Detention

Footprint Area (sf)	Vol. % per footprint area	Design Area (sf)	Storage Depth (ft)	Volume Provided (cft)
11257	87%	9794	4.5	44073

Elevation (ft)	Area (sf)	Depth (ft)	Volume (cft)	Cum. Volume (cft)
905.00	9,794	0.00	0	0
906.00	9,794	1.00	9,794	9,794
907.00	9,794	1.00	9,794	19,588
908.00	9,794	1.00	9,794	29,382
909.00	9,794	1.00	9,794	39,176
909.50	9,794	0.50	4,897	44,073
			Total Volume =	44,073

Storage Elevation Calculation

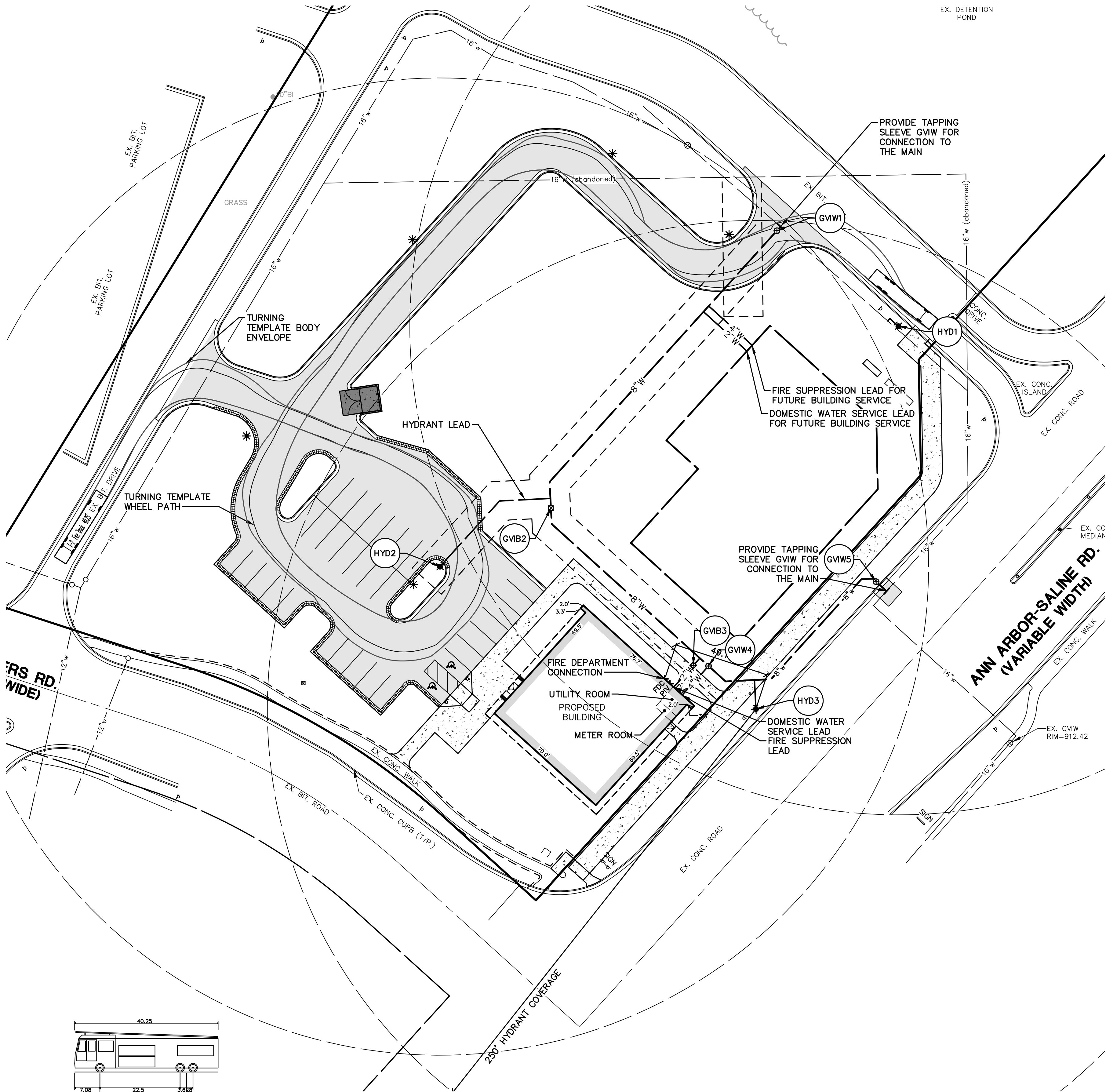
First Flush Elevation (Xff) = 906.00 - 905.00 = Xff = 905.45 ft

Bankfull Elevation (Xbf) = 907.00 - 906.00 = Xbf = 905.91 ft

100-Year Elevation (X100) = 909.50 - 909.00 = X100 = 908.09 ft

44,073 - 39,176 = 30,285 - 39,176

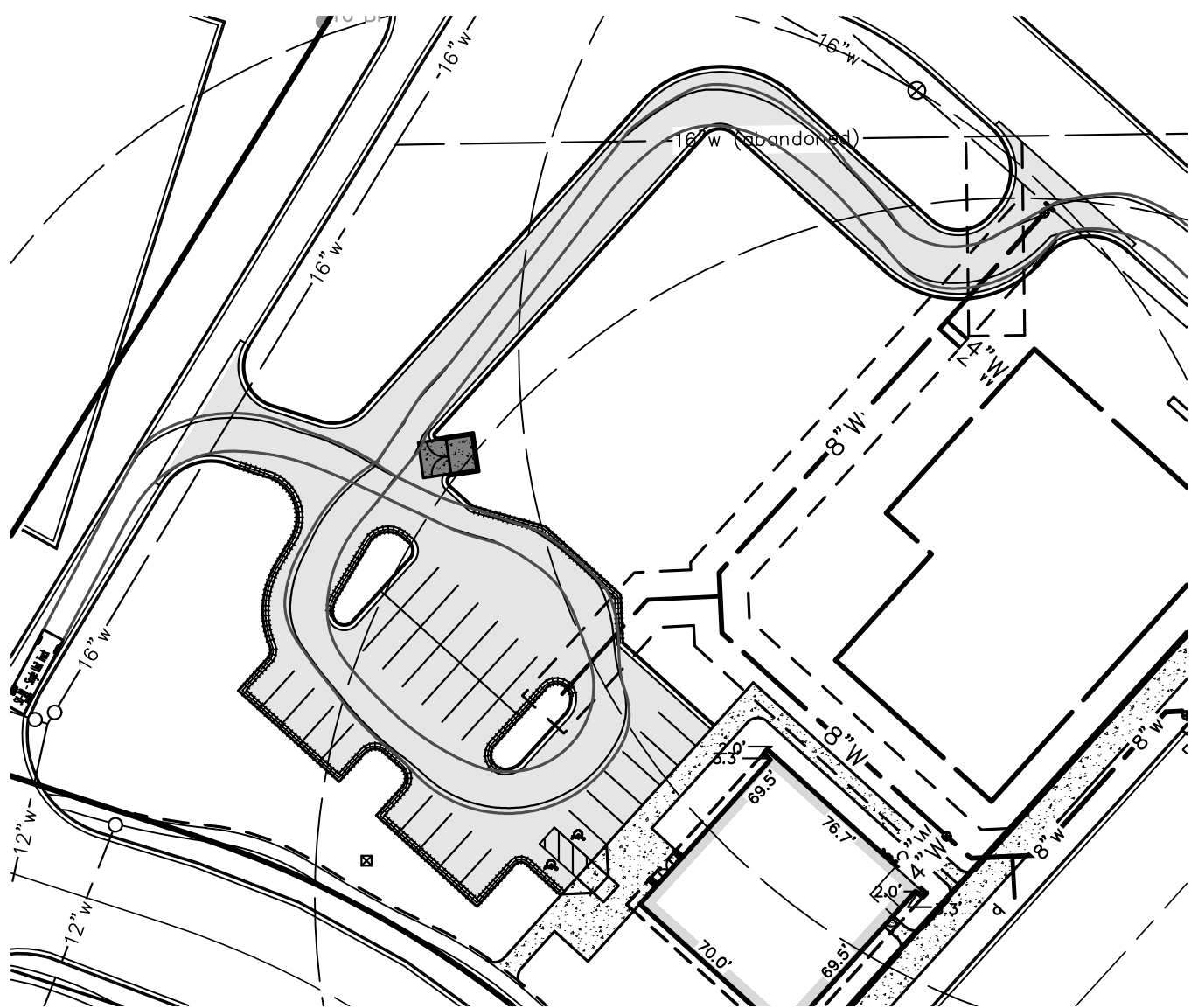
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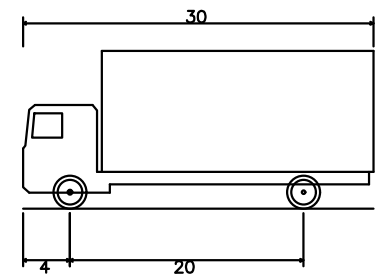
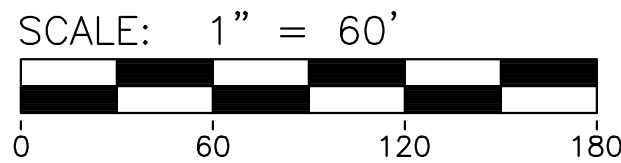
**PITTSFIELD TOWNSHIP TOWER 2 TRUCK**

T-2 Fire Truck	
Overall Length	40.25'
Overall Width	7.00ft
Overall Body Height	11.36ft
Min Body Ground Clearance	1.34ft
Track Width	6.91ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	45.00°

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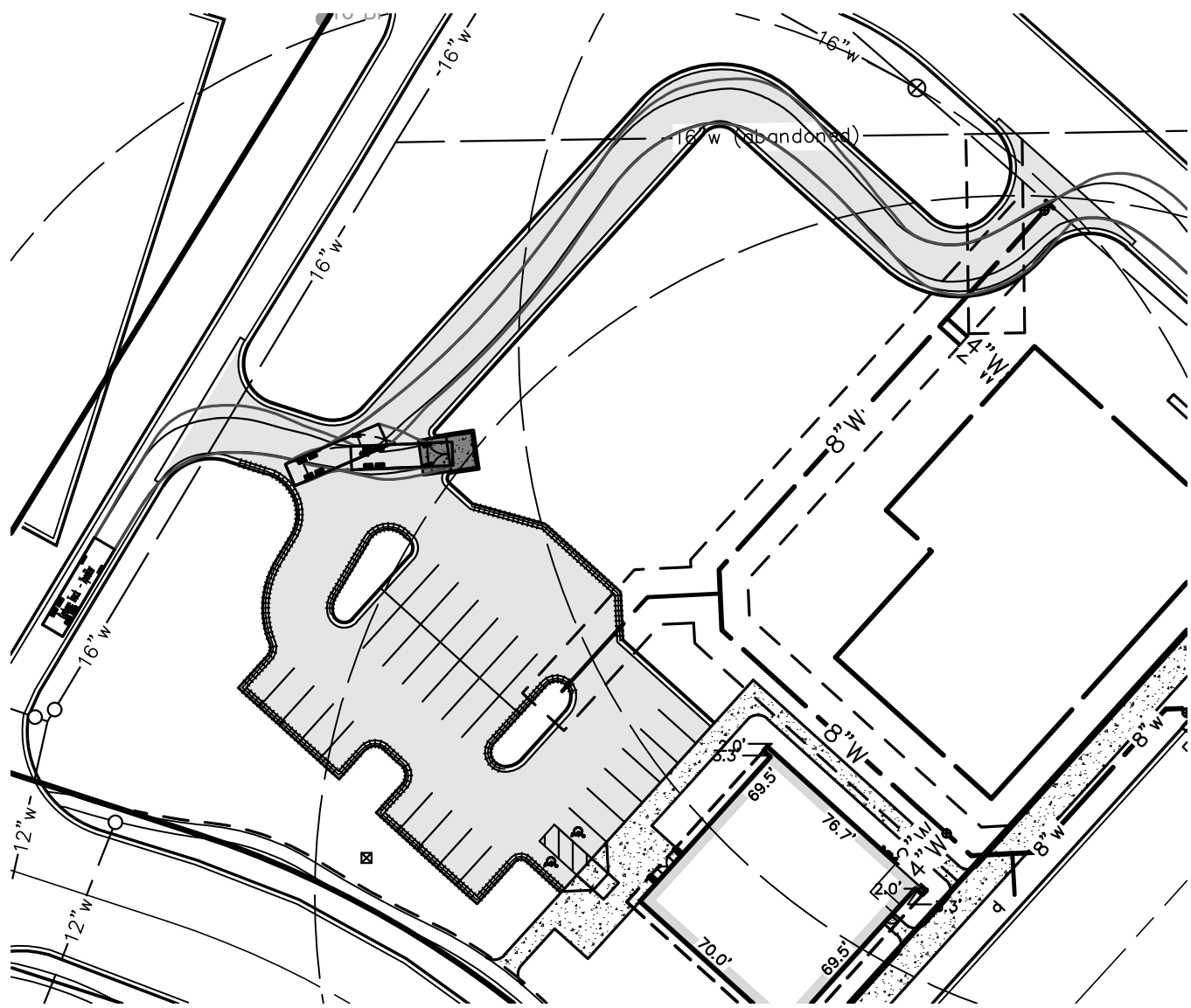


**SU-30 DELIVERY TRUCK TURNING TEMPLATE**

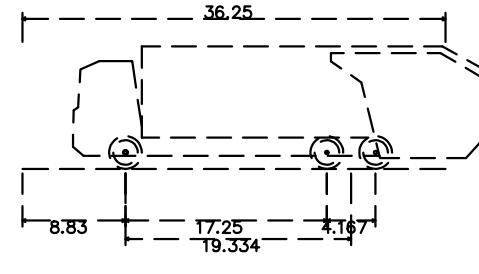
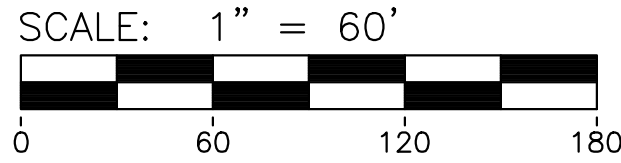


SU-30 - Single Unit Truck  
Overall Length 30.00ft  
Overall Width 8.00ft  
Overall Body Height 13.50ft  
Min Body Ground Clearance 1.36ft  
Track Width 8.00ft  
Lock-to-lock time 9.00s  
Max Steering Angle (Virtual) 31.80°

**SU-30 DELIVERY TRUCK**

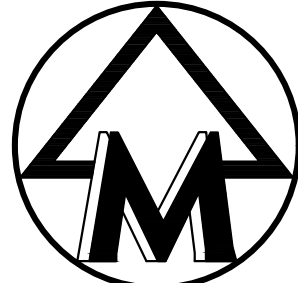


**GARBAGE TRUCK TURNING TEMPLATE**



Garbage Truck - Xpeditor  
Overall Length 36.25ft  
Overall Width 8.42ft  
Overall Body Height 10.43ft  
Min Body Ground Clearance 0.94ft  
Track Width 8.00ft  
Lock-to-lock time 6.00s  
Max Steering Angle (Virtual) 31.80°

**SU-30 DELIVERY TRUCK**



**LEGEND**

- |            |                                   |
|------------|-----------------------------------|
| — W —      | EXIST. WATER MAIN                 |
| — P —      | PROP. WATER MAIN                  |
| — H —      | EXIST. HYDRANT                    |
| — D —      | PROP. HYDRANT                     |
| — G —      | EXIST. GATE VALVE IN BOX          |
| — G —      | PROP. GATE VALVE IN BOX           |
| — G —      | EXIST. GATE VALVE IN WELL         |
| — G —      | PROP. GATE VALVE IN WELL          |
| — X —      | EXIST. CURB STOP & BOX            |
| — X —      | PROP. CURB STOP & BOX             |
| — R —      | REDUCER                           |
| — B —      | EXIST. BLOW-OFF                   |
| — B —      | PROP. BLOW-OFF                    |
| — P.I.V. — | POST INDICATOR VALVE              |
| — P.I.V. — | POST INDICATOR VALVE              |
| — T.B. —   | THRUST BLOCK                      |
| — F.D.C. — | EXIST. FIRE DEPARTMENT CONNECTION |
| — F.D.C. — | PROP. FIRE DEPARTMENT CONNECTION  |
| — K.B. —   | PROP. KNOXBOX                     |

**NOTES**

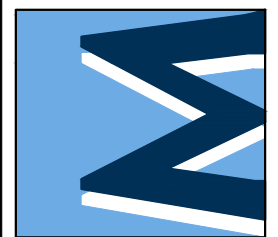
1. WATER SERVICES ARE TO BE SEPARATE DOMESTIC AND FIRE LINES.
2. ADDRESSING: NUMERICS SHALL BE A MINIMUM OF 12 INCHES IN HEIGHT AND CLEARLY VISIBLE WHEN APPROACHING THE BUILDING. SEE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS AND LOCATIONS.
3. FLOW REQUIREMENTS: FLOW SHALL COMPLY WITH NFPA 13 STANDARDS AND SHALL MEET 2015 INTERNATIONAL FIRE CODE (IFC) STANDARDS FOUND IN APPENDIX B, TABLE B 105.1 OF THE CODE.
4. FIRE DEPARTMENT CONNECTIONS (FDC'S) SHALL BE WITHIN 50 FEET OF A HYDRANT.
5. FIRE DEPARTMENT CONNECTION (FDC): HOOK-UP LOCATION IS SUBJECT TO FIRE MARSHAL'S APPROVAL.
6. FDC'S SHALL BE 4 INCH STORZ CONNECTIONS OR (2) 2 1/2 INCH NST CONNECTIONS.
7. FDC ACCESS SHALL COMPLY WITH IFC 912.3.
8. FDC SIGNAGE SHALL BE PROVIDED AND SHALL COMPLY WITH IFC 912.4.
9. FIRE PROTECTION ALARM AND DETECTION SYSTEM SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CODES ADOPTED BY PITTSFIELD TOWNSHIP, INCLUDING NFPA 72, 2007 EDITION AND ALL OTHER REFERENCED STANDARDS.
  - a. A HORN STROBE DEVICE SHALL BE INSTALLED ABOVE THE FDC AND SHALL ACTIVATE UPON SPRINKLER WATER FLOW.
  - b. EMERGENCY RESPONDER RADIO COVERAGE SHALL COMPLY WITH 2015 IFC SECTION 510.
  - c. EMERGENCY VOICE/ALARM COMMUNICATIONS SYSTEM SHALL COMPLY WITH 2015 IFC SECTION 907.6.2.2.
  - d. OCCUPANT NOTIFICATION APPLIANCES SHALL ACTIVATE THROUGHOUT THE NOTIFICATION ZONES UPON SPRINKLER WATER FLOW.
  - e. PLACE SIGNAGE ON FIRE SUPPRESSION SYSTEM CONTROL ROOM DOOR (IFC 2015 SECTION 509.1) IF APPLICABLE.
10. KNOX BOX EMERGENCY ACCESS SYSTEM WITH KEYS TO ACCESS THE BUILDING, THE FIRE SUPPRESSION SYSTEM CONTROL ROOM (IF APPLICABLE), AN ELEVATOR KEY, AND ANY OTHER KEYS TO AREAS THAT MAY BE RELEVANT DURING EMERGENCIES WILL BE REQUIRED. KNOX BOX WITH PROPER KEYS SHALL BE IN PLACE PRIOR TO ISSUANCE OF CERTIFICATES OF OCCUPANCY FOR THE BUILDINGS.
11. THE KNOX BOX SHALL BE MOUNTED NO HIGHER THAN 6 FEET FROM GRADE IN AN APPROVED LOCATION ON THE EXTERIOR FOR EMERGENCY ACCESS TO THE BUILDING AS WELL AS ACCESS TO THE FIRE SUPPRESSION SYSTEM CONTROL ROOMS IF APPLICABLE.
12. IF SITE ACCESS IS TO BE RESTRICTED DURING CONSTRUCTION, KNOX BOX LOCKS FOR GATES ARE TO BE PROVIDED.
13. NO FIREWALLS WILL BE CONSTRUCTED WITHIN THE BUILDING.
14. NO SEPARATE FIRE SUPPRESSION SYSTEM CONTROL ROOM IS REQUIRED.
15. STORAGE AREA FOR CONSTRUCTION MATERIALS SHALL NOT INTERFERE WITH FIRE/EMERGENCY SERVICES.
16. WATER SUPPLY FOR THE BUILDING SHALL MEET THE DEMAND FOR AN AUTOMATIC SPRINKLER SYSTEM, INCLUDING HOSE STREAM ALLOWANCE, PER APPENDIX B105.3 AND SHALL MEET THE MINIMUM REQUIREMENTS IN 2015 IFC, APPENDIX B, TABLE B105.1.
17. THE PROPOSED BUILDING WILL BE ONE STORY, 22 FT IN HEIGHT.
18. THE PROPOSED BUILDING WILL BE USED AS A NEW OFFICE/INSTITUTIONAL BUILDING.

**CONSTRUCTION ACCESS NOTES**

CONSTRUCTION TRAFFIC WILL ENTER FROM ANN ARBOR-SALINE ROAD TO THE SITE AND EXIT THROUGH OAK VALLEY CENTER PERIMETER DRIVE TO OAK VALLEY DRIVE TO WATERS ROAD TO ANN ARBOR-SALINE ROAD.



**MIDWESTERN CONSULTING**  
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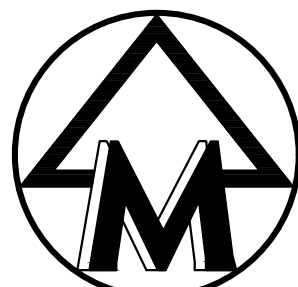
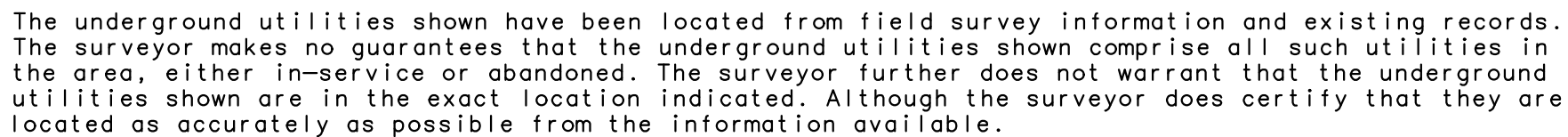


**CLIENT**  
OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG

**OAK VALLEY OUTLOT**  
PRELIMINARY SITE PLAN  
FIRE PROTECTION & ACCESS PLAN

**07**

JOB No.	22095	DATE: 12/13/22
REVISIONS:		SHEET 07 OF 20
TOWNSHIP REVIEW	REV. DATE: 06/18/23	CADD: CTS
MUNICIPAL REVIEW	06/15/23	ENG: TPH
		FIN: KEB
		TECH: KEB
		PRELIM/22095FP1














SCALE: 1" = 30'

A horizontal scale bar divided into four equal segments. The first segment is white, the second is black, the third is white, and the fourth is black. Below the bar are tick marks and labels: '0' at the left end, '30' at the first segment boundary, '60' at the second segment boundary, and '90' at the right end.



Know what's **below**.  
**Call** before you dig

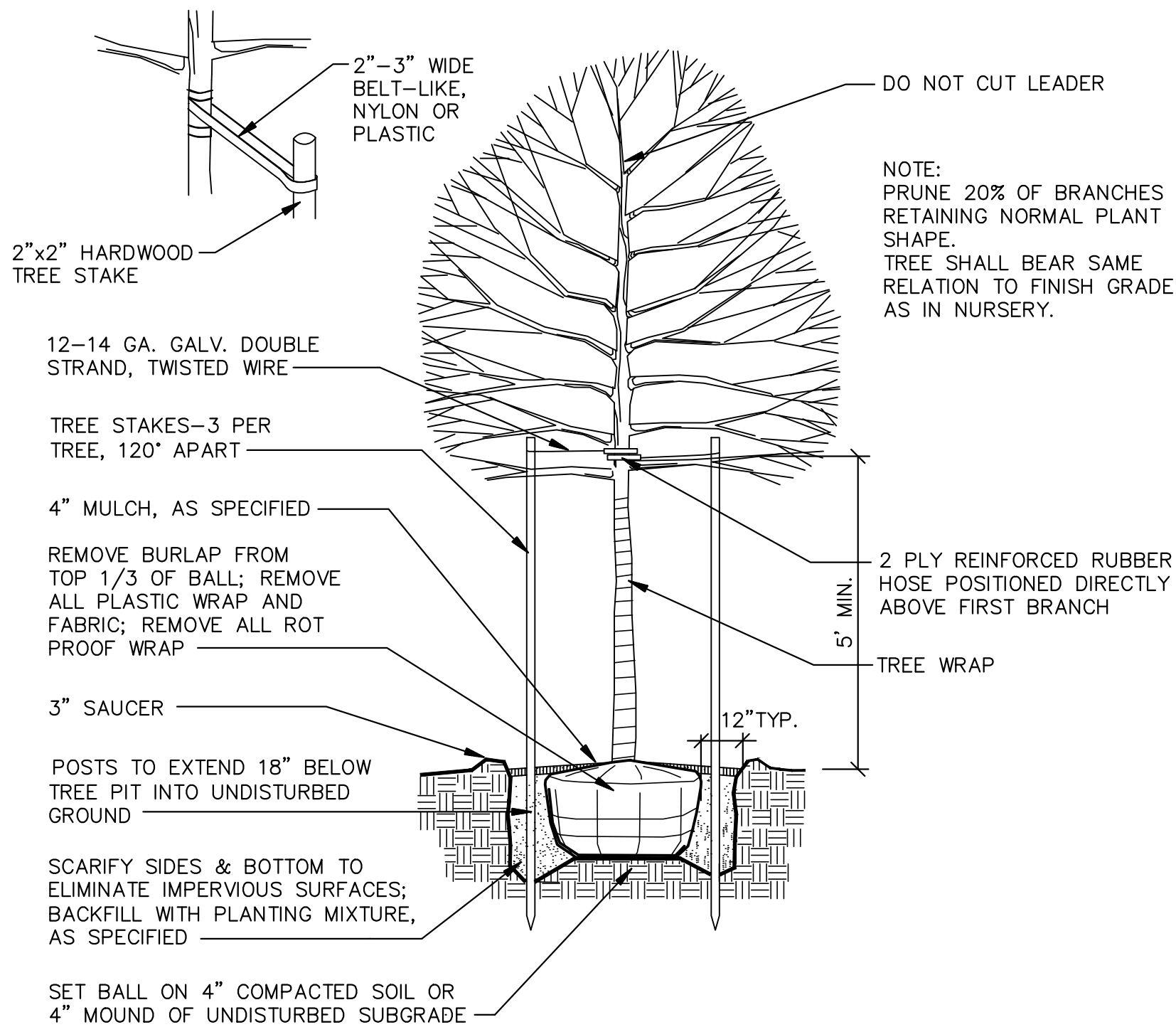
## LANDSCAPE LEGEND

- |   |   |
|---|---|
|    | RELOCATED EXISTING TREE                   |
|    | PROPOSED SHADE TREE<br>(INTERIOR ISLANDS) |
|    | PROPOSED CANOPY TREE<br>(PERIMETER TREE)  |
|   | PROPOSED CANOPY TREE<br>(STREET TREE)     |
|  | PROPOSED ORNAMENTAL TREE                  |
|    | PROPOSED EVERGREEN SHRUBS                 |
|    | PROPOSED SHRUBS                           |
|    | PROPOSED PERENNIAL BED                    |
|    | PROPOSED KNEE WALL                        |
|  | PROPOSED VEHICULAR USE AREA               |
|  | PROPOSED METAL EDGING                     |

## LANDSCAPE REQUIREMENTS

Street trees		Allowed/ Required	Proposed
	Internal streets	1 Tree per 50LF  Northeast: 340 LF Northwest: 362 LF Total: 702 LF / 50 = 14 Trees Required	10 Trees proposed 4 Trees are prevented due to the existing utilities and obstructions.
Front Greenbelt			
	Front Greenbelt	10ft Minimum, 1 tree per 30LF, 30" ht screening hedge/berm/wall, Minimum deciduous trees caliper of 2.5", If evergreen tree is used, minimum height of 5' to 6'.  Ann Arbor-Saline Road: 350 LF Waters Road: 294 LF Total: 644 LF / 30 = 22 Trees Required	11 Existing Trees (transplanted) 11 Trees proposed
Vehicle Use Area			
	Interior islands	5% parking lot area, 200sf minimum, 10ft width Parking lot area: 13,386 sf 13,386 * 0.05 = 669 sf required	1,523 sf Proposed
	Interior island trees	1 Shade tree per 8 spaces 32 / 8 = 4 trees required	5 Trees proposed
	Perimeter	1 Canopy tree per 40 LF  128' (North), 105' (East), 115' (South), 82' (West) Total: 430LF / 40 = 11 Trees required.	11 Trees proposed; 4 Trees are proposed on Northeast in anticipation of Phase 2 expansion in the future.
Site Landscaping			
		20% Site landscaping required  Outlot only: 116,727 sf (net) Landscape Area: 86,121 sf 86,121 / 116,727 = 73.8%	73.8%; requirement fulfilled.
Outdoor refuse			
		Screening wall and gate in side/rear yard; 10ft from property line	1 Trash enclosure provided with evergreen shrub screening.
Screening between land uses		Min. 6' height along all adjoining boundaries when a proposed use is either more intense or incompatible with an adjoining property.	Not Applicable; Parcel is adjacent to retail and is compatible.
Tree Mitigation			
		Heritage trees - 200% DBH x 1.4 Woodland trees - 100% DBH x 1.4	Not Applicable; No trees were removed.

NOTE: REMOVE STAKING/GUYING MATERIAL AFTER ONE YEAR.



### DECIDUOUS TREE PLANTING DETAIL

2-1/2" CAL. OR SMALLER

DO NOT TRIM EVERGREENS

SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY

DO NOT PLANT SHRUBS TO WITHIN 42" OF TREE TRUNKS IN SHRUB BEDS

4" MULCH AS SPECIFIED

3" SAUCER

REMOVE BURLAP FROM TOP 1/3 OF BALL; REMOVE ALL PLASTIC WRAP AND FABRIC; REMOVE ALL ROT PROOF WRAP

PLANT MIXTURE AS SPECIFIED

SCARIFY SIDES & BOTTOM TO ELIMINATE IMPERVIOUS SURFACES

SET BALL ON 4" COMPACTED SOIL OR 4" MOUND OF UNDISTURBED SUBGRADE

NOTE: SPECIAL PLANTING MIX REQUIRED FOR ERICACEOUS PLANTINGS AS SPECIFIED.

### SHRUB PLANTING DETAIL

NOT TO SCALE

NOTE: PRUNE 20% OF BRANCHES AND FOLIAGE RETAINING NORMAL PLANT

SHAPE DO NOT TRIM EVERGREENS

SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IN NURSERY

DO NOT PLANT SHRUBS TO WITHIN 42" OF TREE TRUNKS IN SHRUB BEDS

4" MULCH AS SPECIFIED

3" SAUCER

REMOVE BURLAP FROM TOP 1/3 OF BALL; REMOVE ALL PLASTIC WRAP AND FABRIC; REMOVE ALL ROT PROOF WRAP

PLANT MIXTURE AS SPECIFIED

SCARIFY SIDES & BOTTOM TO ELIMINATE IMPERVIOUS SURFACES

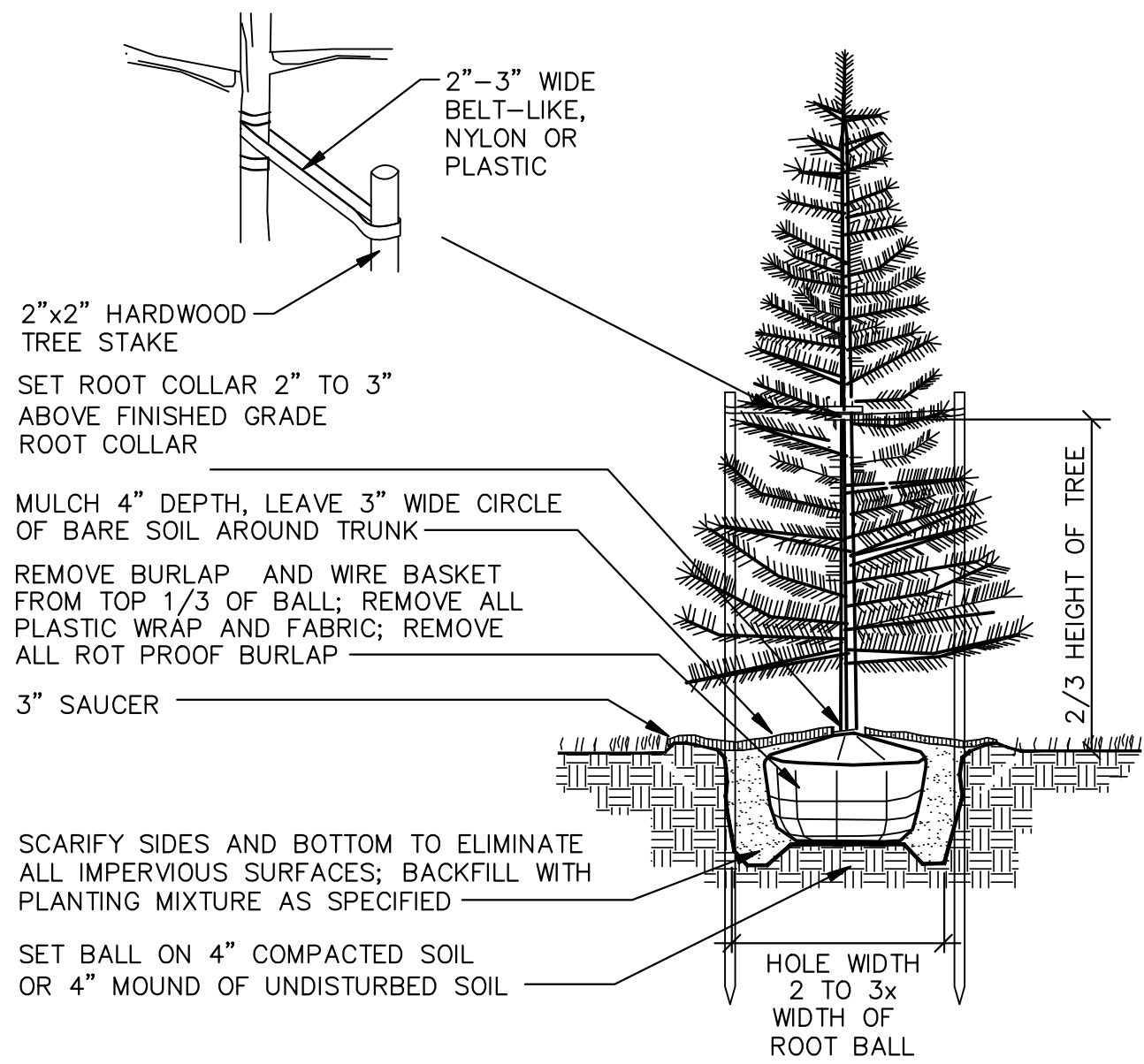
SET BALL ON 4" COMPACTED SOIL OR 4" MOUND OF UNDISTURBED SUBGRADE

NOTE: SPECIAL PLANTING MIX REQUIRED FOR ERICACEOUS PLANTINGS AS SPECIFIED.

### EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

NOTE: REMOVE STAKING/GUYING MATERIAL AFTER ONE YEAR.



### EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

MATERIALS TO BE FLUSH WITH THE TOP OF EDGING

PROPOSED LAWN AREA

PROPOSED LANDSCAPE BED

ALUMINUM EDGING W/ 12 1/2" STAKES 4' ON CENTER

### ALUMINUM EDGING DETAIL

NOT TO SCALE

### PROCEDURES

1. IMMEDIATELY AFTER MOVING SATURATE ROOT BALL WITH WATER.
2. FILL AND TAMP VOIDS AROUND BALL WITH TOPSOIL.
3. WATER AGAIN AND REPEAT.
4. SAUCER, GUY AND MULCH.

6" TOPSOIL SAUCER

FINISH GRADE

1/2" Ø BLACK RUBBER HOSE

TREE WRAP

NO. 12 GALVANIZED WIRE DOUBLE STRAND WITH TURN BUCKLE (3 PER TREE)

6" DEEP OF SHREDDED BARK

SPADED TREE BALL

4' LONG STEEL FENCE STAKE OR 2"x 2"x 30" STAKE

PRIOR TO SETTING TREE SCARIFY WALLS OF TREE PIT WITH A SHOVEL

TOPSOIL BACKFILL

UNDISTURBED SOIL

### DECIDUOUS TREE - TRANSPLANTING DETAIL

NOT TO SCALE

### MAINTENANCE PLAN

Landscape Maintenance Schedule				
	Winter	Spring	Summer	Fall
<b>Perennial Beds</b>				
Maintenance Task				
Full Weeding				
Place plant material orders as needed				
Prune shade trees, summer flowering shrubs, hedges and groundcover				
Remove mulch from around crown of perennials; remove winter mulch				
Press perennials that frost heaved in the winter back into ground				
Check evergreen plants for removal of dead leaves				
Fertilize Trees and Shrubs, planting beds				
Clean flower beds, remove winter weeds and dead plant material left for winter interest				
Apply double shredded bark mulch to tree/shrub beds and ground leaf compost to flower beds				
Pressure irrigation system and perform spring audit				
Aerate soil with fork trow				
Remove all winter mulch from planting beds				
Divide and replant summer and fall blooming perennials (when growth is 3-4 in high), cut back if needed				
Divide spring flowers after flowering				
Install new plantings, and compost during planting; pinching perennials may be necessary				
Replace dead/poor health perennials and grasses				
Water new transplants and newly planted trees and shrubs				
Prune spring blooming shrubs immediately after flowering				
Placement of stakes/hoops to support perennials as needed				
Prune winter damaged branches or plants that have not begun to grow after last frost				
Replace mulch as necessary				
Weed flower beds routinely				
Install summer annual flowers				
Prune/join back perennials and grasses for height control and shaping				
Cut back/join spring flowering plants as needed				
Inspect plants for pests and treat as necessary				
Thin out perennial beds and prune plants as needed				
Water beds as needed				
Deadhead spent blooms, deaden yellowing foliage				
Fertilize perennials, especially cut back plants and heavy feeding perennials				
Cut back perennials that bloom second time to basal foliage				
Prune perennials and shrubs to maintain spacing in bed				
Divide and plant spring and summer flowering perennials				
Add touch up mulch to planting beds				
Rake leaves, now or ahead for composting				
Clean up planting beds - remove yellowing foliage not left for winter interest, remove dead/hoop				
Top-dress planting beds with organic matter if not done in spring				
Turn off irrigation system and flush out				
Winter mulch tender plants once ground is frozen				
<b>Turfgrass Areas</b>				
Maintenance Task				
Remove wet leaves, fallen branches/debris				
Apply pre-emergent crabgrass control herbicide to cool season turfgrasses				
Fertilize lawn				
Pressure irrigation system and perform spring audit				
Aerate lawn as needed (every two years)				
Inspect for grubs, treat as needed				
Hand remove weeds, Spot application of herbicide if necessary				
Weekly mowing of turfgrass (when reaches height of 2.5 to 3 in.), leave grass clippings, remove clumps				
Bi-weekly edging of turfgrasses				
Deep water lawn every 1-2 inch per week				
Prepare and seed bare areas				
Water newly seeded areas				
Rake leaves or moss and leave for composting				
Fertilize lawn				
Turn off irrigation system and flush out				
Routinely remove debris such as leaves, twigs, trash, etc.				

BIKE RACKS ARE TO BE SPACED 3' O.C. (TYP.)

BIKE RACK TO BE SUPPLIED BY OWNER

4" CONCRETE (SEE PLAN FOR LAYOUT)

4" SAND BASE COMPACTED TO 98% MAX. UNIT DENSITY WEIGHT

COMPACTED OR UNDISTURBED SUBGRADE

CONCRETE FOOTING

### BIKE RACKS IN CONCRETE

NOT TO SCALE

### LANDSCAPE NOTES

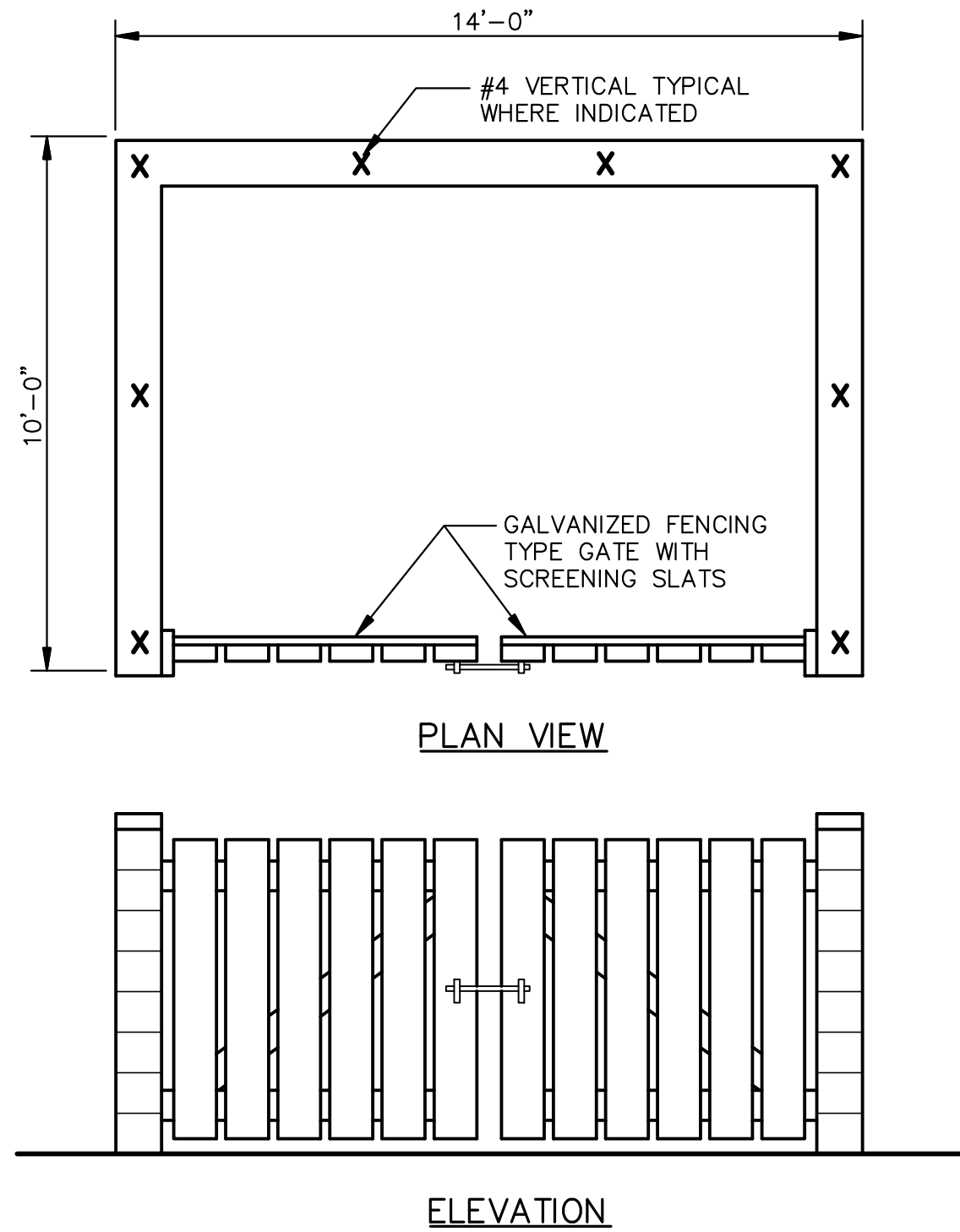
Landscape Note

1. For any plant quantity discrepancies between the plan view and the plant schedules, the plant schedule shall take precedence.
2. Plant materials shall be selected and installed in accordance with standards established by Pittsfield Township.
3. In-ground automatic irrigation shall be provided for common open space areas including Maple Road corridor and entrances, eastern conflicting land use buffer, southern conflicting land use buffer on western parcel, and pedestrian pathway corridor. Agricultural areas to be restored with native seeding and undisturbed areas will not be irrigated. Contractor to provide irrigation shop drawings for review and approval.
4. All diseased, damaged or dead material shown on the site plan as proposed plantings shall be replaced by the end of the following growing season.
5. Restore areas to be seeded with native vegetation and shrub planting beds with a minimum of twelve (12) inches of topsoil and then seed/fertilize/mulch. Restore all other disturbed areas with a minimum of four (4) inches of topsoil and then seed/fertilize/mulch.
6. All disturbed areas not to be seeded with seed mixes identified on the Landscape Plan shall be lawn areas. Fertilizer for the initial installation of lawns shall provide not less than one (1) pound of actual nitrogen per 1,000 sq ft of lawn area and shall contain not less than two percent (2%) potassium and four percent (4%) phosphoric acid.
7. Lawn (turfgrass) seed mix shall consist of:
  - a. 15% Rugby Kentucky Bluegrass
  - b. 10% Park Kentucky Bluegrass
  - c. 40% Ruby Creeping Red Fescue
  - d. 15% Penliffe Perennial Ryegrass
  - e. 20% Scallid Hard Fescue
8. Seed shall be applied at a rate of five pounds (5 lbs) per 1000 sq ft. Mulch within 24 hours with two (2) tons of straw per acre, or 71 bales of excelsior mulch per acre. Anchor straw mulch with spray coating of adhesive material applied at the rate of 150 gals. / acre.
9. After the first growing season, only fertilizers that contain NO phosphorus shall be used on the site.
10. Areas identified on the Landscape Plan with seed mixes shall be seeded with specified seed mixes from Cardno, or equivalent as approved by landscape architect. Temporary cover crop shall be included with all seed mixes. Seeding rates and installation techniques shall be confirmed with supplier.
11. All seeded areas with slopes less than 1:3 (one vertical foot for every 3 horizontal feet) shall be mulched with straw mulch at the rate of two (2) bales per 1,000 square feet. All seeded areas with slopes greater than 1:3 shall be seeded and biodegradable erosion control blanket North American Green SC150, or equivalent, shall be applied with biodegradable stakes.
12. Deciduous plants shall be planted between March 1 and May 15 and from October 1 until the prepared soil becomes frozen. Evergreen plants shall be planted between March 1 and June 1 and from August 15 to September 15.
13. Native seeding areas shall be seeded after May 1, (when soil is free of frost and in workable condition), but before June 15 or after October 1, but before November 30 (or prior to ground freezing) or as approved by Landscape Architect or guaranteed by
12. All planting beds are to receive four (4) inches of shredded bark mulch.
13. All trees to be located a minimum of 10 feet from public utilities.
14. Proposed trees will be planted a minimum of 10 feet apart.
15. All single trunk, deciduous trees shall have a straight and a symmetrical crown with a central leader. One sided trees or those with thin or open crowns shall not be accepted.
16. All evergreen trees shall be branched fully to the ground, symmetrical in shape and have not been sheared in the last three (3) growing seasons.
17. All compacted subgrade soils in proposed landscape beds shall be tilled to a minimum 12-inch depth prior to placement of topsoil, geotextile fabric, or other planting media as specified.
18. Planting Soil: Existing, in-place or stockpiled topsoil. Supplement with imported topsoil as needed. Verify suitability of existing surface soil to produce viable planting soil. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix surface soil with the following soil amendments to produce planting soil:
  - a. Ratio of Loose Compost to Topsoil by Volume: 1:4.
  - b. Weight of Lime per 1000 Sq. Ft.: Amend with lime only on recommendation of soil test to adjust soil pH.
  - c. Weight of Sulfur or Aluminum Sulfate per 1,000 Sq. Ft.: Amend with sulfur or aluminum sulfate only on recommendation of soil test to adjust soil pH.
  - d. Volume of Sand: Amend with sand only on recommendation of Landscape Architect to adjust soil texture.
  - e. Weight of Slow-Release Fertilizer per 1,000 Sq. Ft.: Amend with fertilizer only on recommendation of soil test to adjust soil fertility.
19. Native seeding installation shall be performed by a qualified contractor with documented experience of successful established native seeding. Seed shall be installed per manufacturer's specification via hand broadcast.
20. At the time of plant and seed delivery for the detention basins, including native seed and live plantings, a Washtenaw County Water Resource Commissioner landscape reviewer must be present. Contact Catie Wytchak at [wytchakc@washtenaw.org](mailto:wytchakc@washtenaw.org) or 734-222-6813 to coordinate.

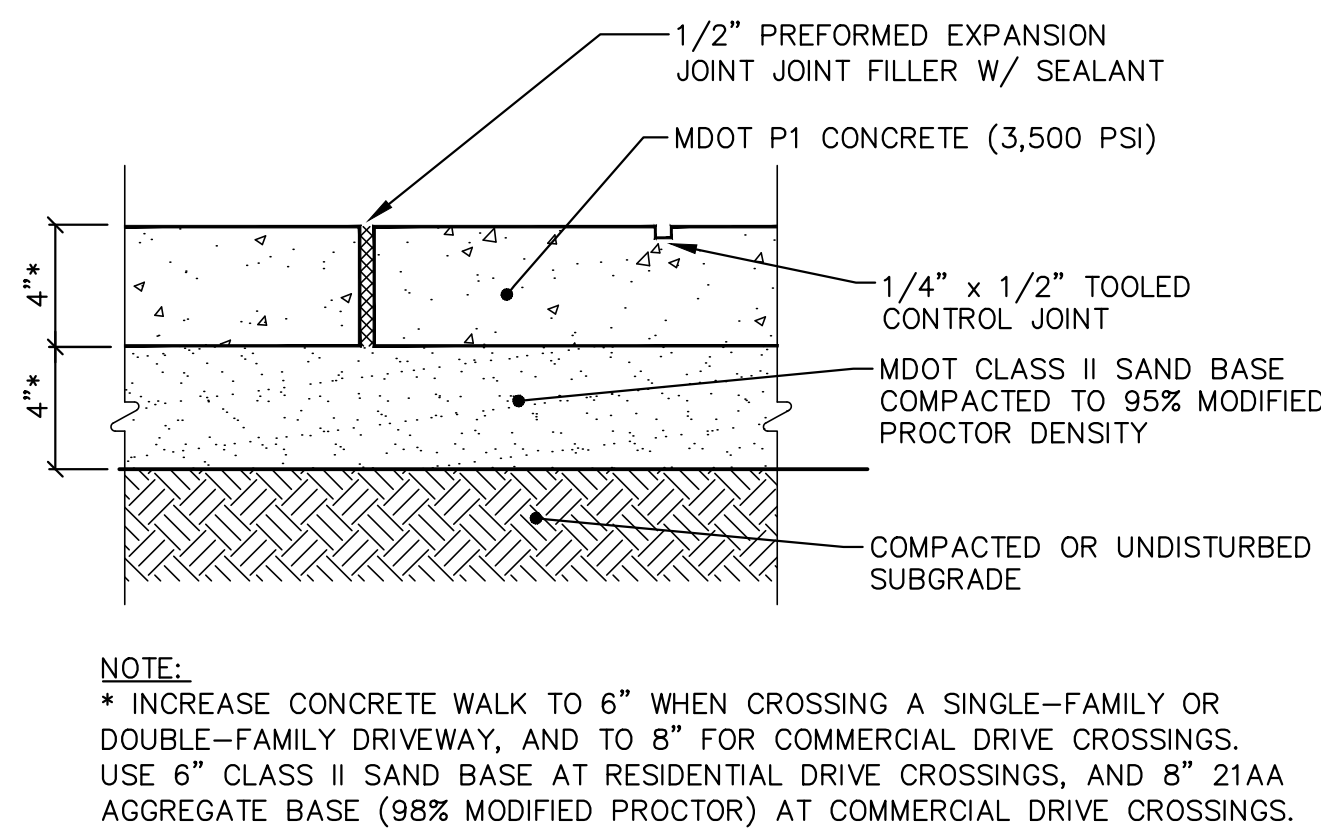
Native Landscape Maintenance

1. Native seeding areas shall be maintained by contractor for three years after installation to promote establishment of native vegetation and reduce weeds and invasive species. Contractor is responsible for obtaining any necessary permits for herbicide applications. All herbicide applied to native areas shall be suitable for aquatic environments.
2. During the first growing season, the seeded areas shall be mowed monthly to a height of 4 to 6 inches when vegetation reaches 10 to 12 inches in height through September. Annual invasive weeds such as crabgrass, purple knapweed, purple loosestrife, yellow or white sweet clover, black medic or other invasive plants shall be spot controlled with herbicide. Do not hand pull invasive weeds during first growing season.
3. During the second growing season, the seeded areas shall be mowed approximately every month to a height of 6 inches when vegetation reaches 12 to 18 inches. Annual invasive weeds noted above shall be spot controlled with or hand pulled as appropriate.
4. During the third growing season, the seeded area shall be mowed to 4 inches in height during early spring (between February and April) and raked to remove clippings. Annual invasive weeds noted above shall be spot controlled with herbicide appropriate or hand pulled as appropriate.
5. Long-term maintenance of the native seeded areas and detention basin shall be performed by the Owner. Maintenance shall include mowing to 4 inches in height during early spring (between February and April) and raking to remove clippings. Spot treatment/removal of invasive weeds may be necessary if localized areas become dominated by invasive weeds.

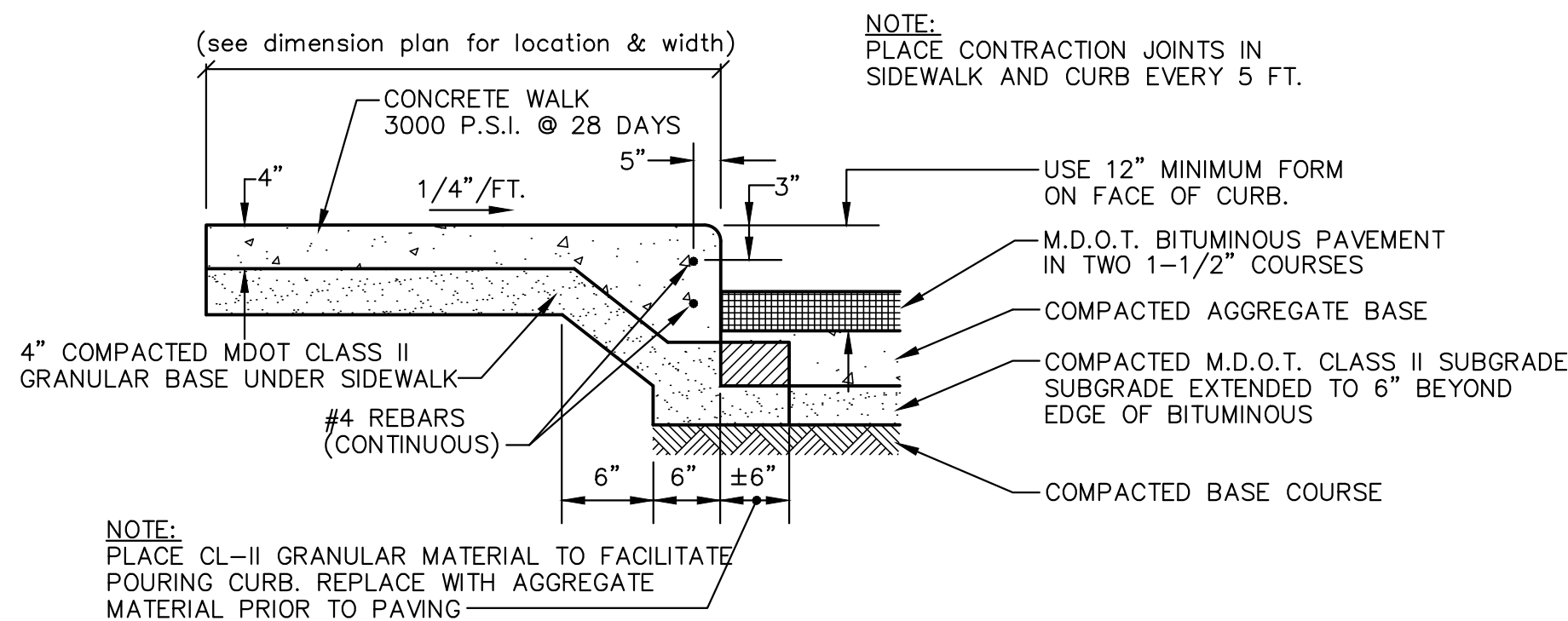
MA:\civil\134\_P\proj2009\Pre\imrny\2209501.dwg, 6/16/2023 9:36 AM, Kara J. Vuich, 10 SITE DETAILS, MCLLC PDF.ppt3  
Copyright © 2023 Midwestern Consulting L.L.C. All rights reserved. No part of this drawing may be used or reproduced in any form or by any means, or stored in a database or retrieval system, without prior permission of Midwestern Consulting L.L.C.



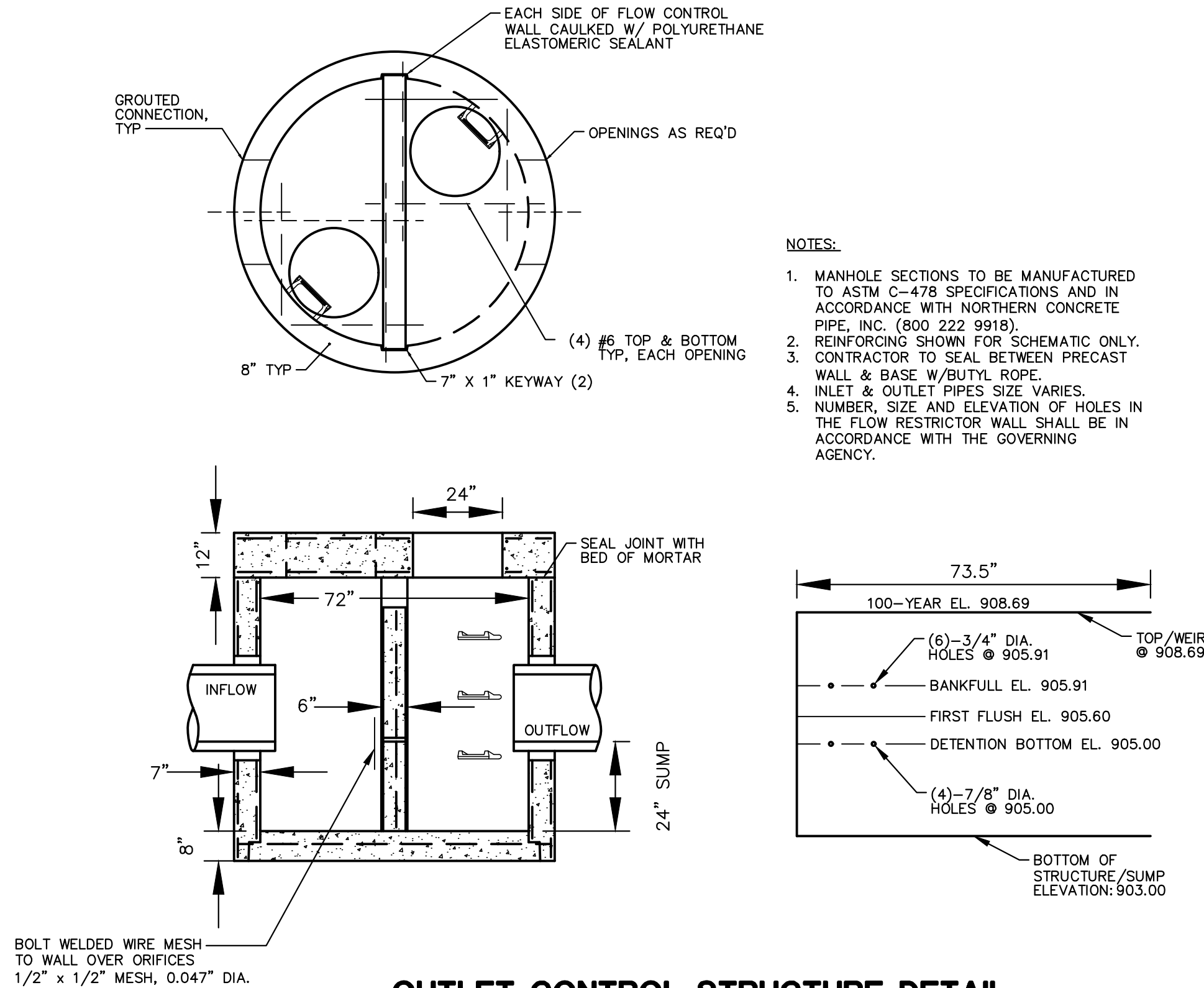
REFUSE CONTAINER ENCLOSURE DETAIL  
NOT TO SCALE



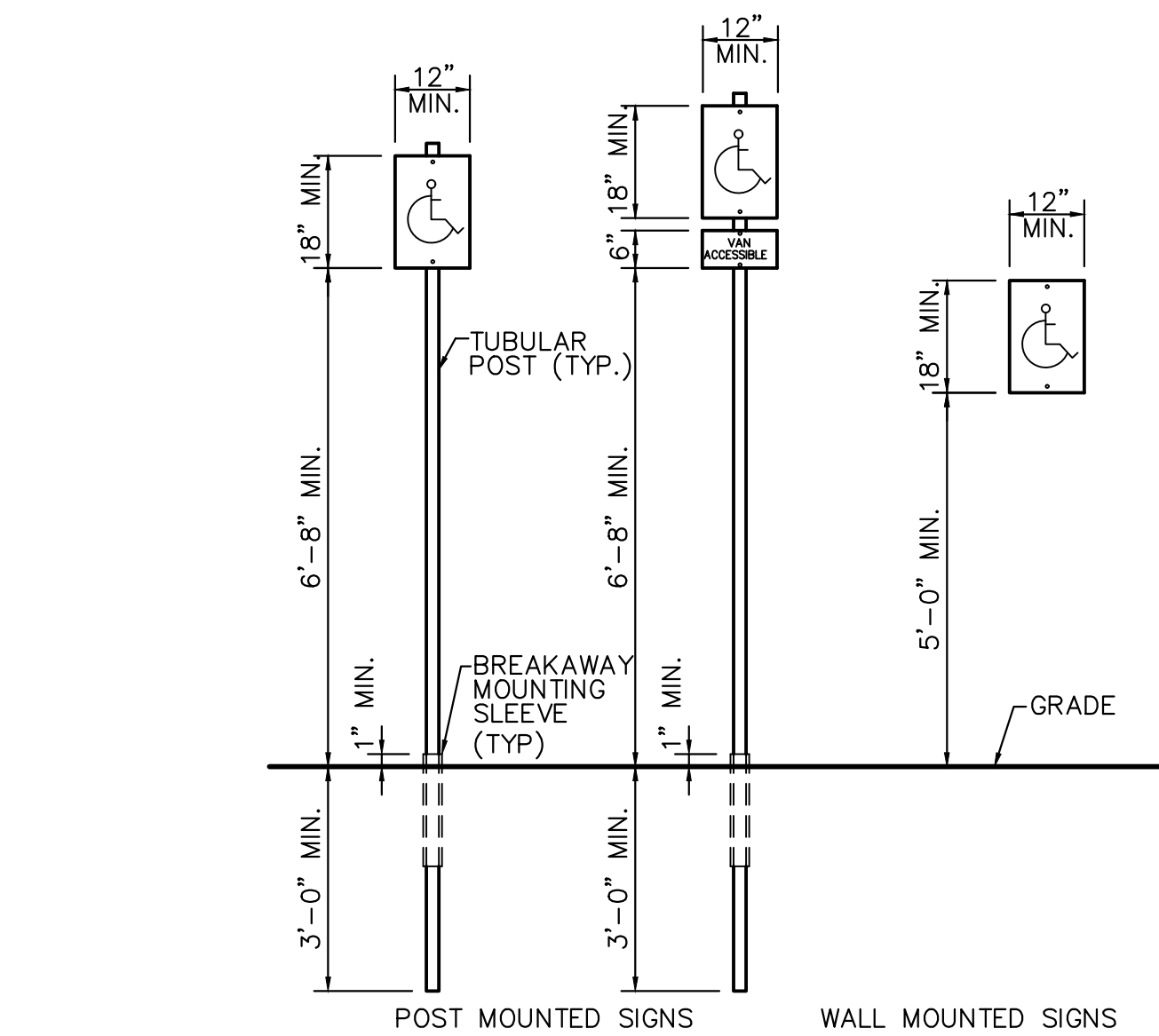
CONCRETE WALK DETAIL  
NOT TO SCALE



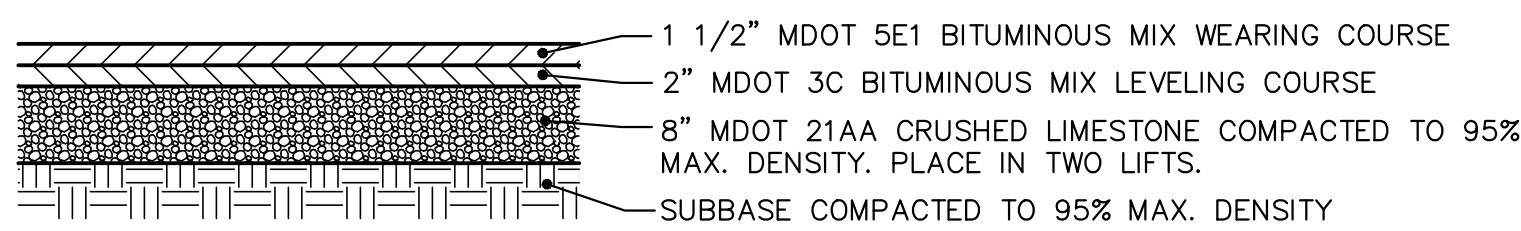
TYPICAL INTEGRAL WALK AND CURB  
NOT TO SCALE



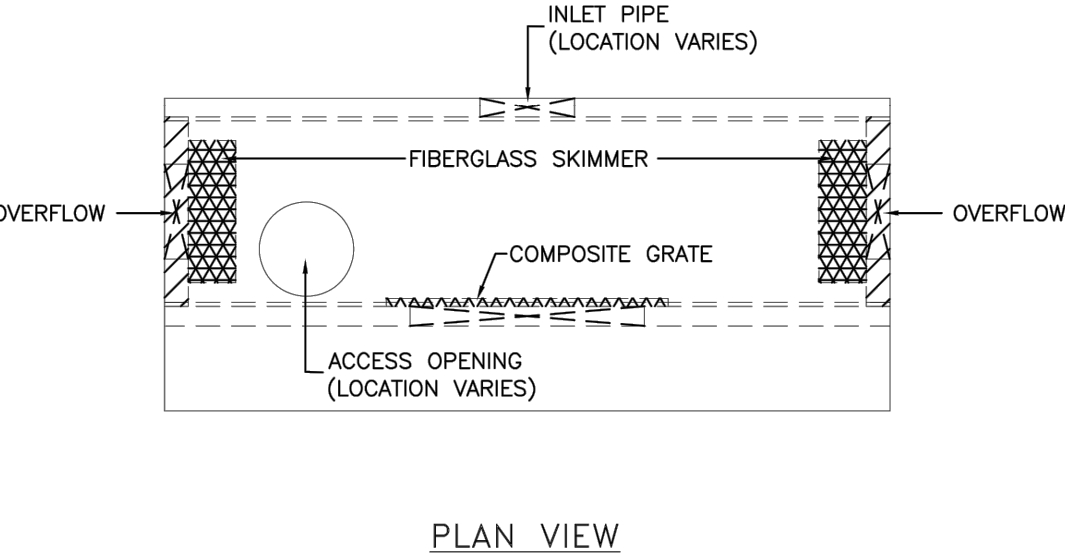
OUTLET CONTROL STRUCTURE DETAIL  
NO SCALE



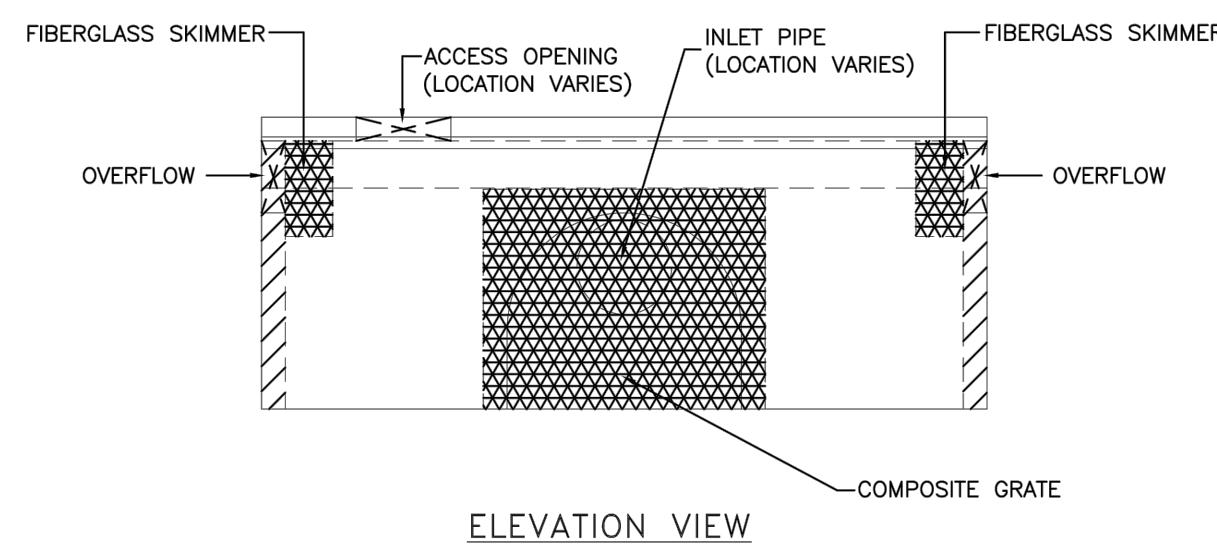
TYPICAL BARRIER FREE PARKING SIGNS  
NOT TO SCALE



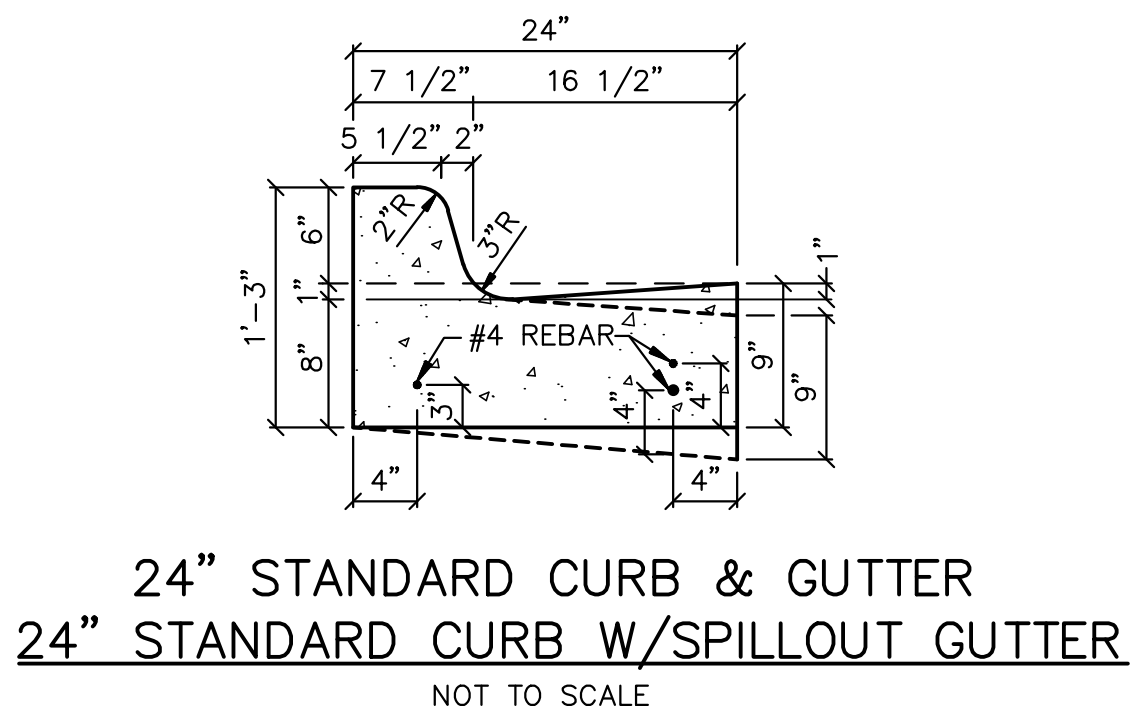
BITUMINOUS PAVEMENT DETAIL (PRIVATE)  
(FOR USE IN PRIVATE DRIVES AND PARKING LOTS)  
NOT TO SCALE



PLAN VIEW



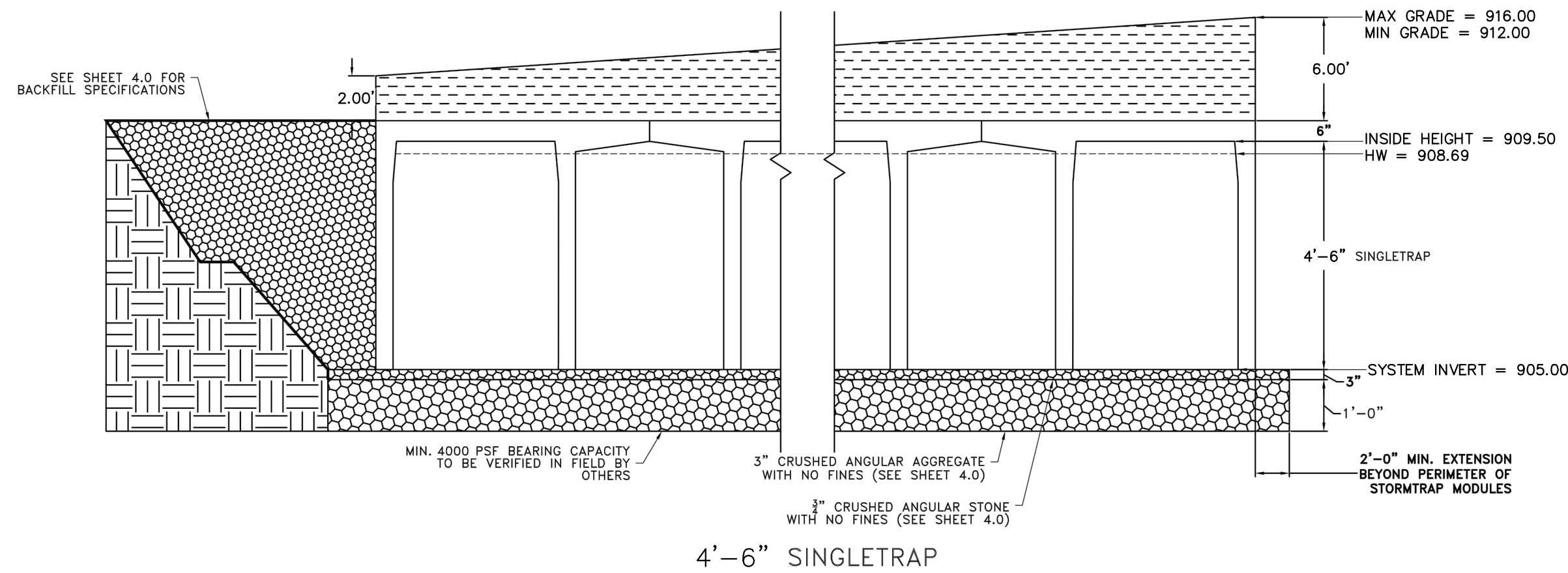
ELEVATION VIEW



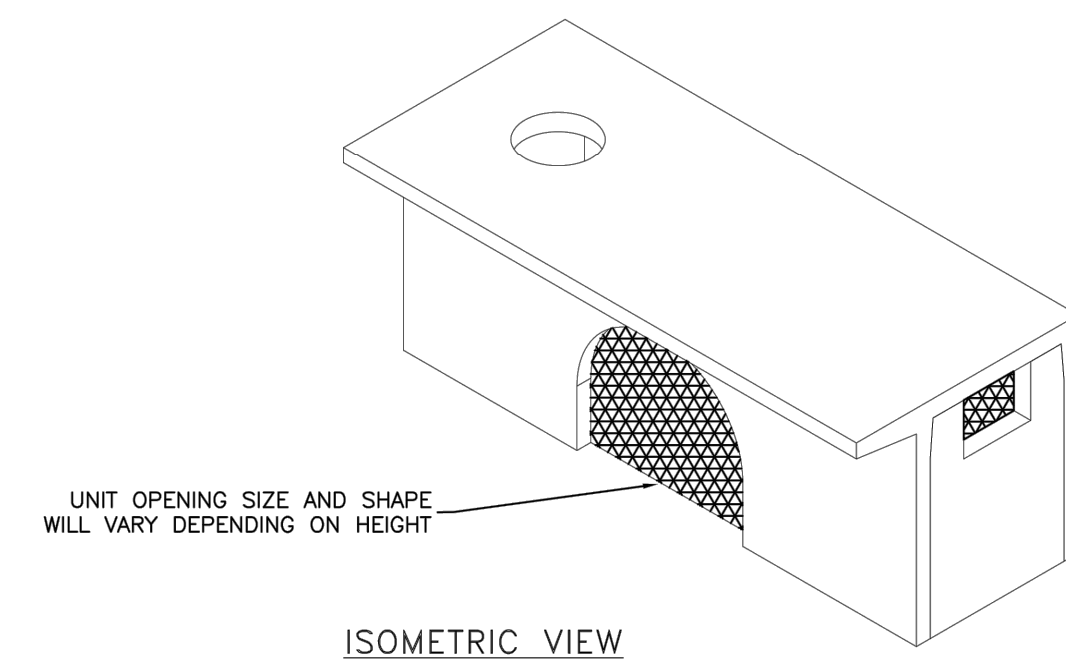
24" STANDARD CURB & GUTTER  
24" STANDARD CURB W/SPILLOUT GUTTER  
NOT TO SCALE

SITE SPECIFIC DESIGN CRITERIA

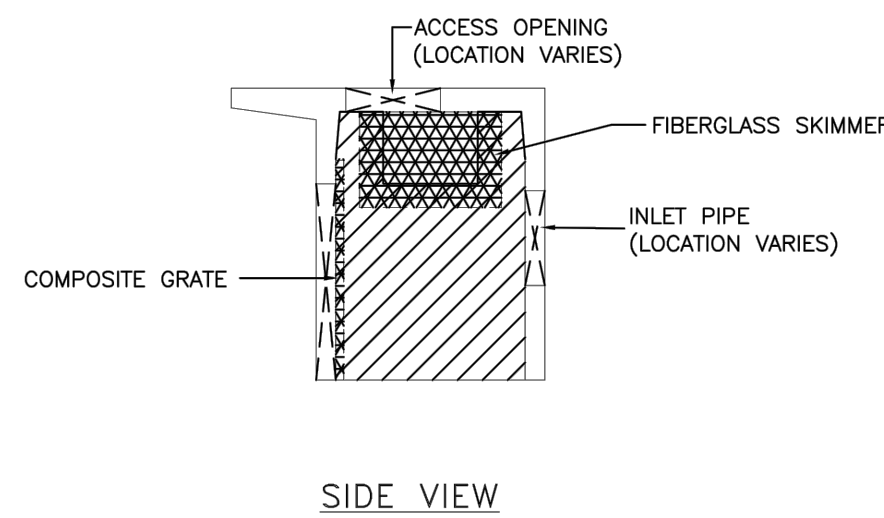
- STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
- COVER RANGE: MIN. 2.00' MAX. 6.00' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
- ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
- FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.



DETENTION SYSTEM DETAIL

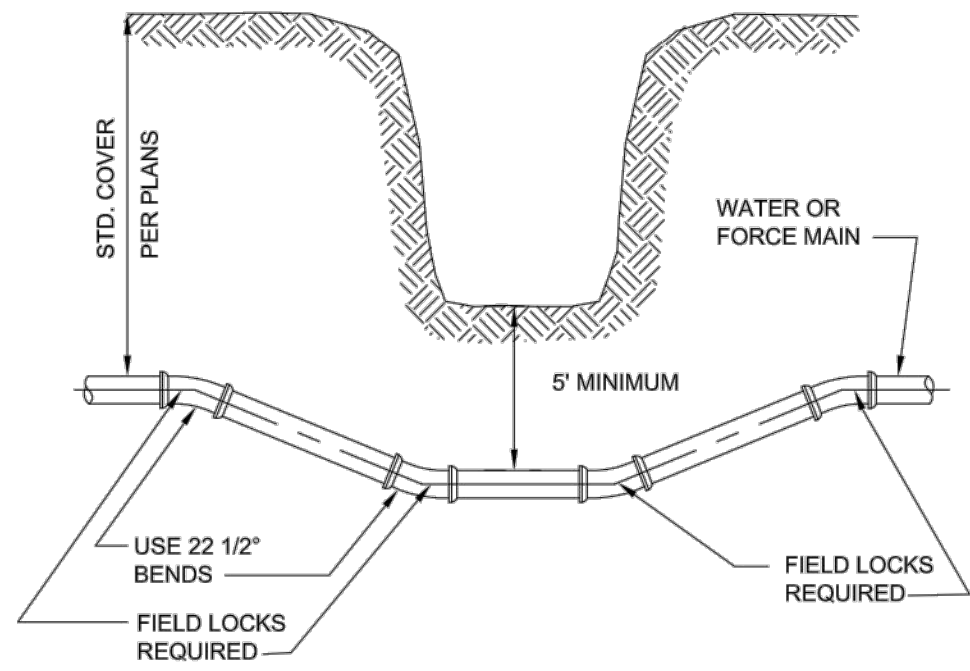


ISOMETRIC VIEW

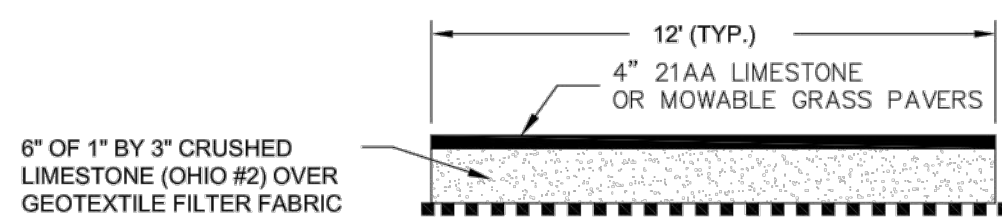


SIDE VIEW

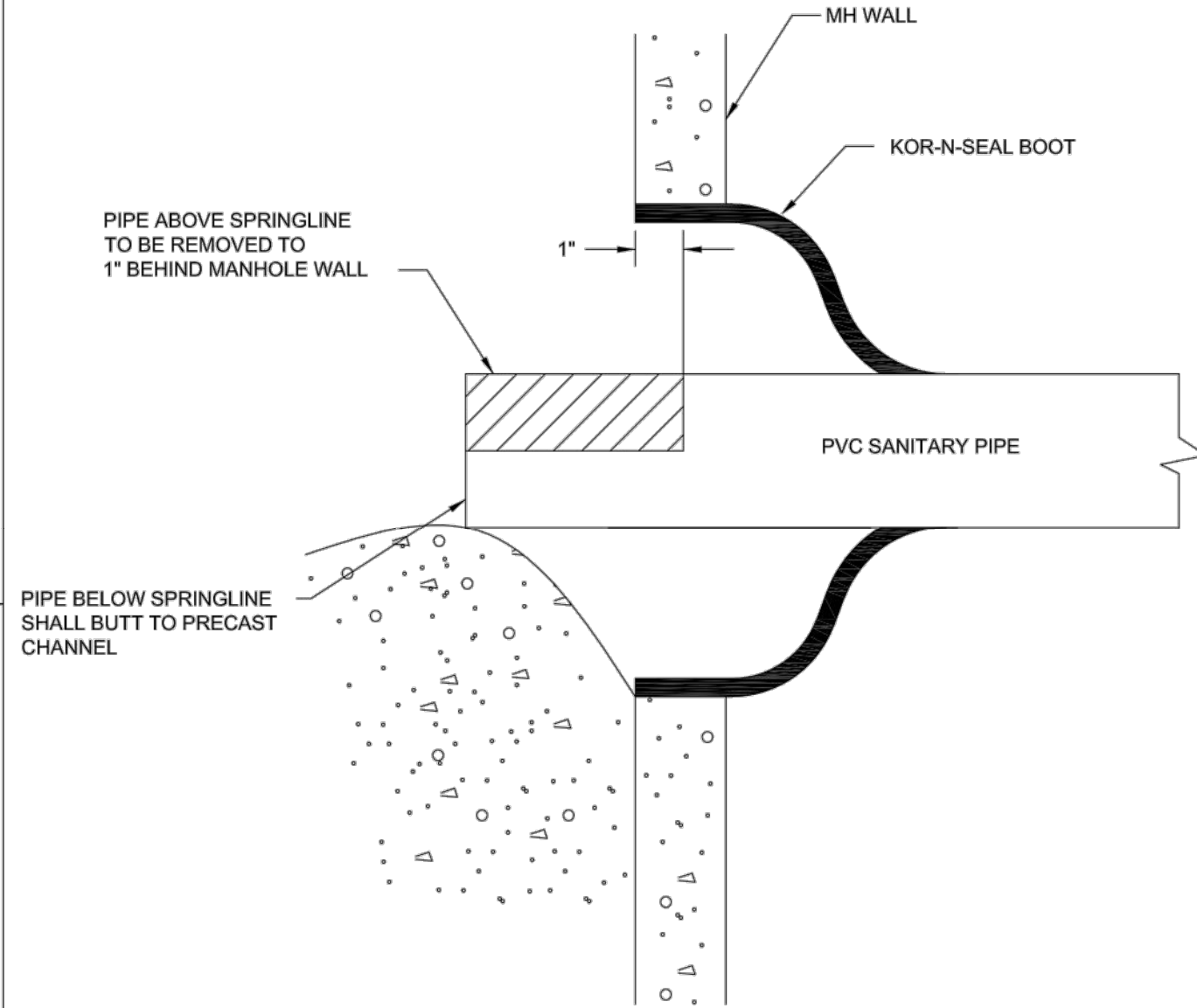
M:\Civ\134\_Proj\120905\Pre\iminery\22090501.dwg, 6/16/2023 9:36 AM, Kara J. Vuich, 11 SANITARY SEWER DETAILS, MCLC PDF, pc3  
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DITCH & STREAM CROSSING

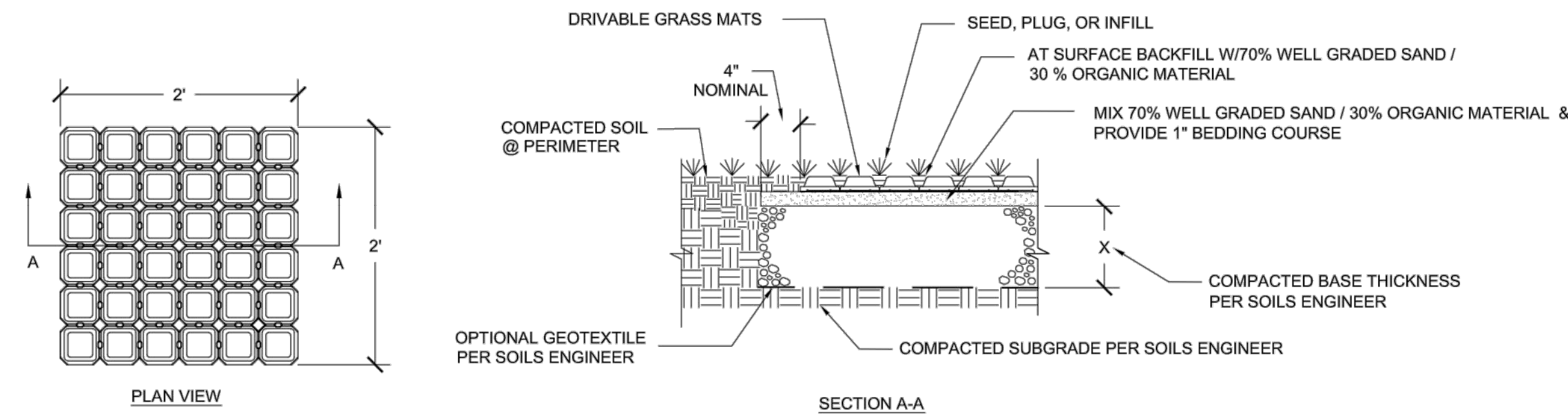


SANITARY SEWER ACCESS PATH

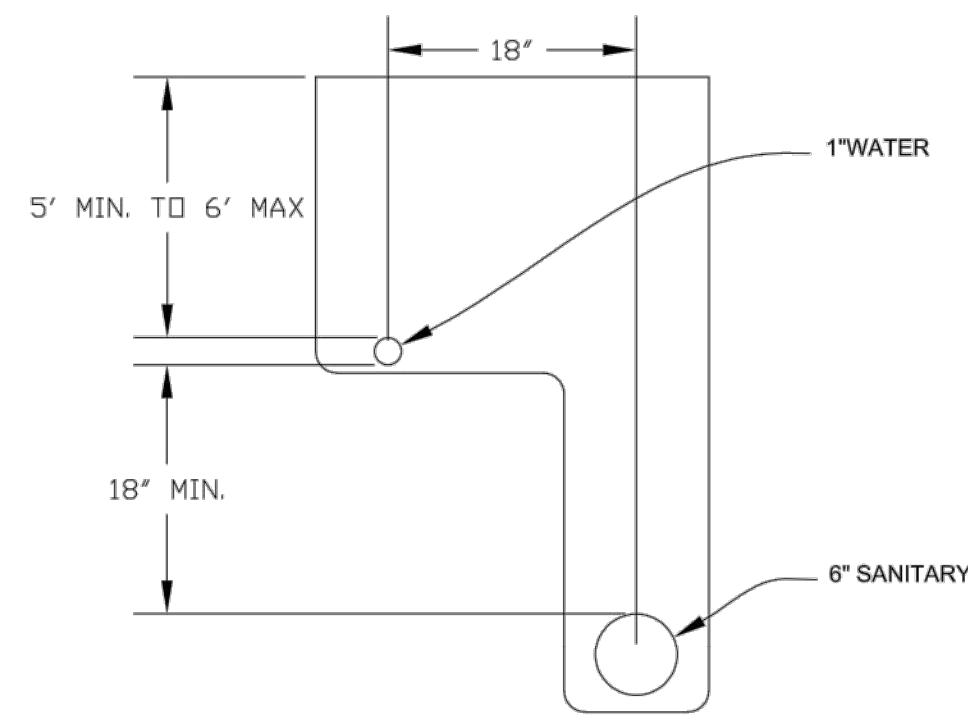


SANITARY PIPE PENETRATION

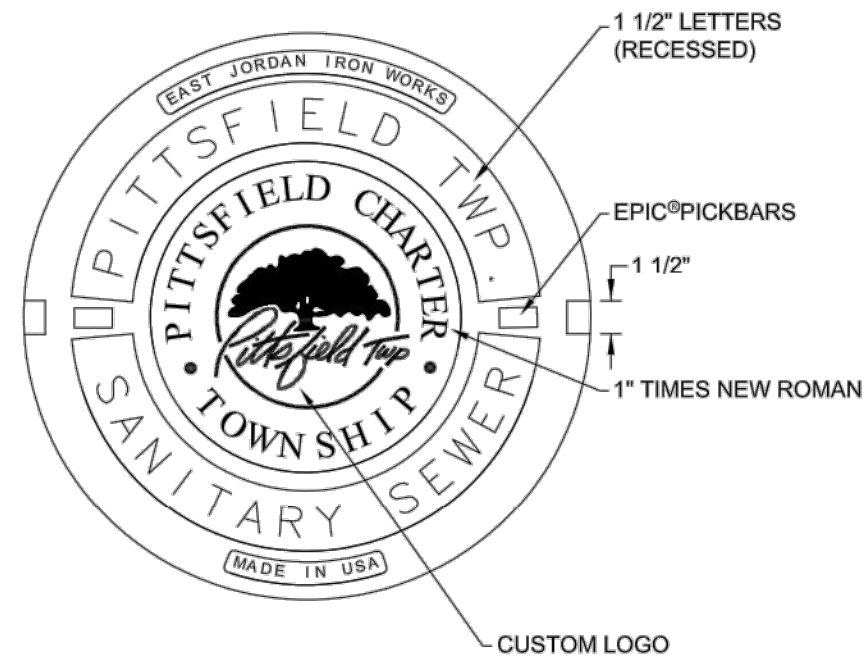
NOTE:  
FOR STORMWATER MANAGEMENT APPLICATIONS  
INCLUDING STORAGE AND INFILTRATION, ALTERNATE  
INFILLS, BASE MATERIAL, AND DRAINAGE MAY BE  
REQUIRED



TYPICAL HEAVY TRAFFIC DRIVABLE GRASS DETAIL



TYPICAL L TRENCH DETAIL  
HOUSE LEADS

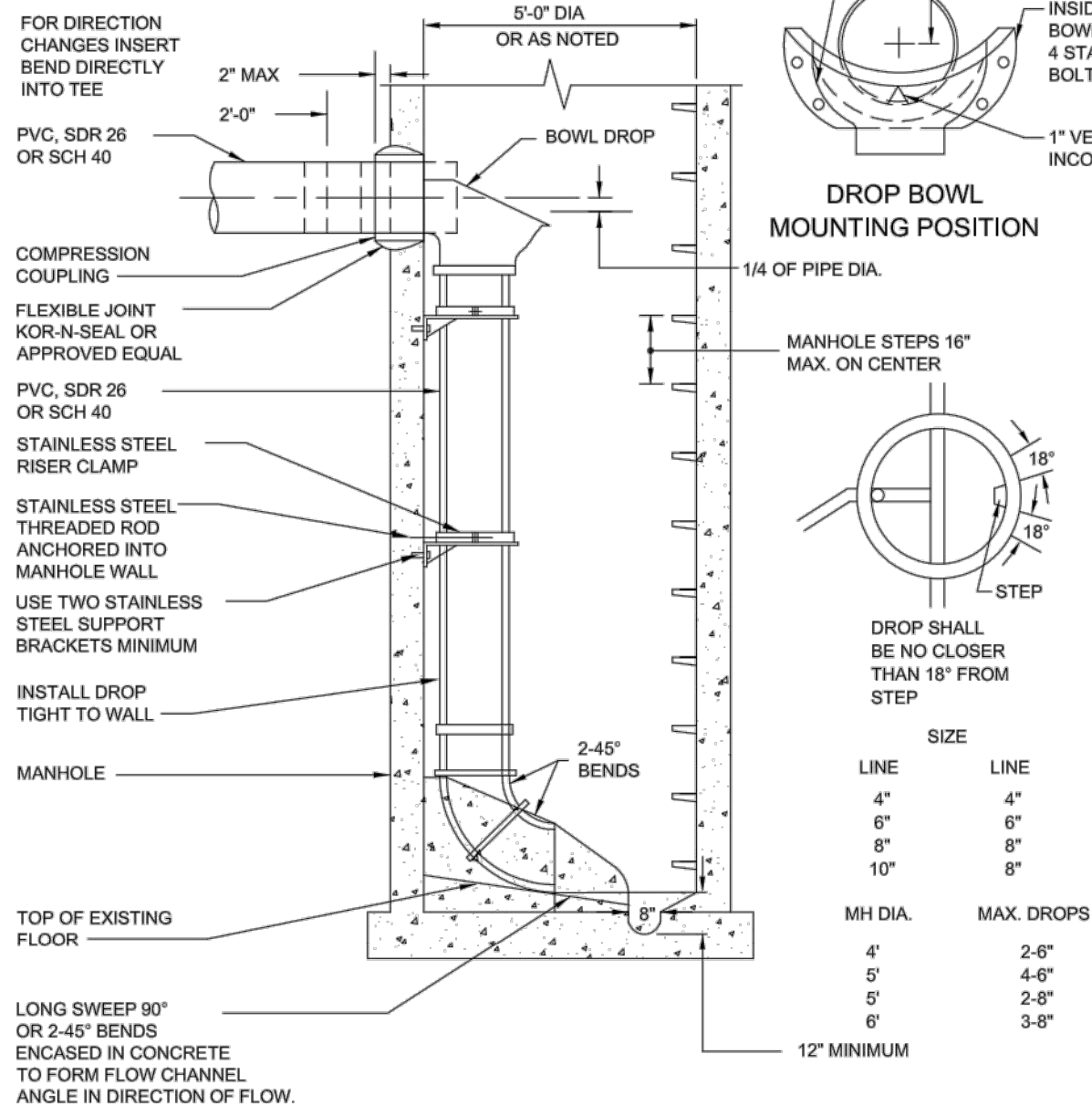


EAST JORDAN IRON WORKS 1040 Z BOLT DOWN FRAME  
EAST JORDAN IRON WORKS 1040 AGS COVER

COVER DETAIL

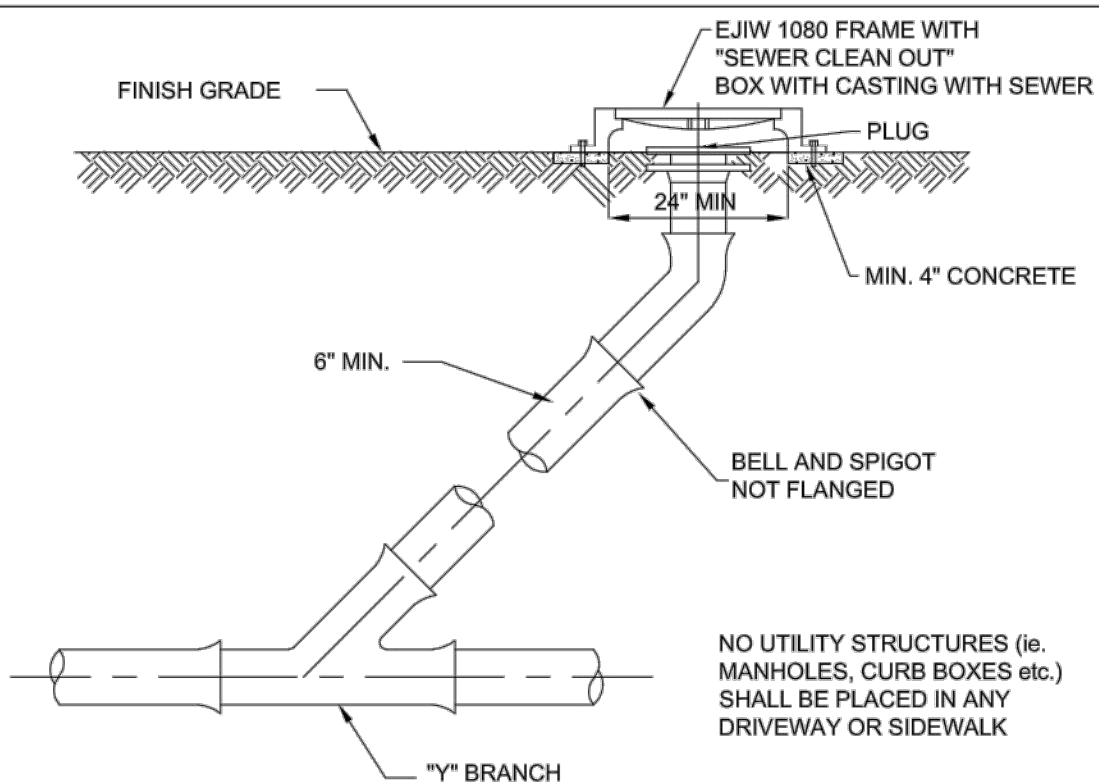
NOTES:

1. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS OR EQUAL.
2. ATTACH THE DROP BOWL & EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH 3/8" x 3 3/4" RAMSETTED HEAD BOLTS HELD IN PLACE WITH 2 STAGE EPOXY PASTE.



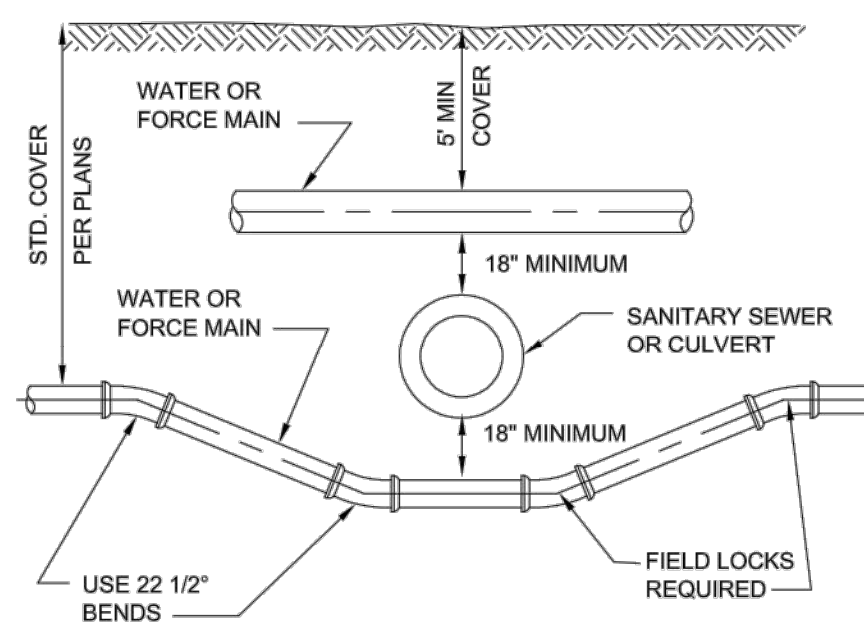
INTERIOR DROP  
SANITARY MANHOLE

NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK



SANITARY SEWER CLEANOUT

NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK



SEWER OR CULVERT CROSSING

PRE-CAST CONCRETE MANHOLE

1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.
5. PROVIDE INTEGRAL BASE WITH PRECAST CONCRETE CHANNELS.
6. WHERE MANHOLES ARE CONSTRUCTED OVER EXISTING SEWERS, POURED IN PLACE OR PRECAST COOKIE AND DOGHOUSE STRUCTURES MAY BE USED IN PLACE OF INTEGRAL BASE.

E.J.I.W. #1040 W/TYPE "AGS" COVER  
W/PITTSFIELD TWP. "SANITARY" IN  
RAISED LETTERS

FRAME SET IN MASTIC AND BOLTED TO  
PRECAST

HDPE ADJUSTMENT RINGS  
FOR GRADE ADJUSTMENT  
MANUFACTURE'S RECOMMENDED  
SEALANT BETWEEN RINGS.  
STEPS 16" MAX ON CENTER

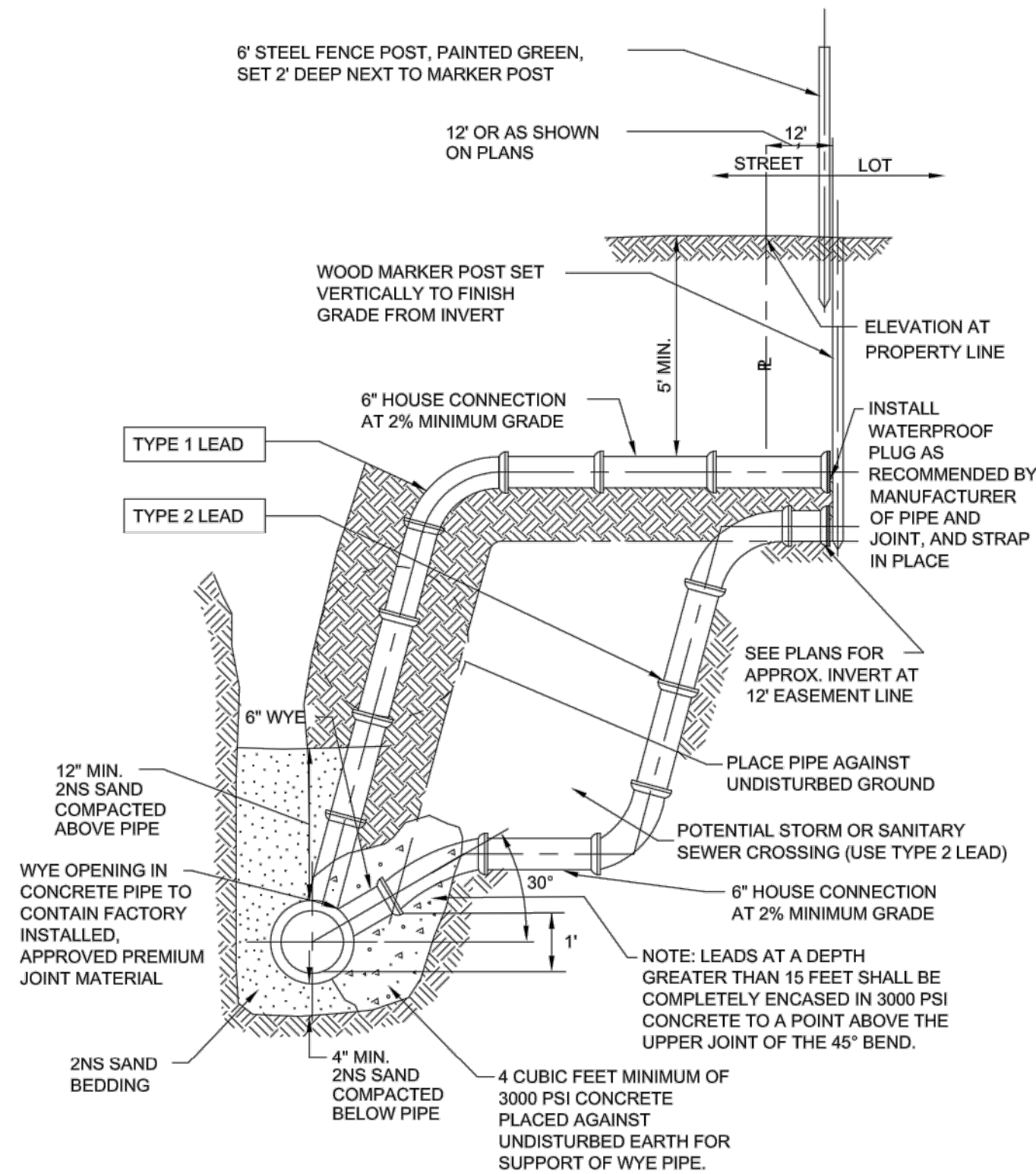
WHERE PRECAST CHANNELS  
ARE NOT POSSIBLE,  
CHANNEL TO BE 3000 PSI CONCRETE  
POURED AS SHOWN AND TROWELED

ALL CHANNELS TO BE FULL DEPTH.

PRECAST BOTTOM SHALL BE 3000  
PSI CONCRETE WITH 4X4 WIRE MESH.

NO UTILITY STRUCTURES (ie.  
MANHOLES, CURB BOXES etc.)  
SHALL BE PLACED IN ANY  
DRIVEWAY OR SIDEWALK

SANITARY MANHOLE



SANITARY SEWER SERVICE  
& RISER CONNECTION DETAIL



Pittsfield Charter Township  
6201 W. Michigan Ave.  
Ann Arbor, MI 48108-9721  
48108-9721  
Tel. 734.822.3101  
www.pittsfield-mi.gov

COVER DETAIL UPDATE	MRH	DRW	14.01.24
TWP REV	BWA	DRW	11.04.27
MANHOLE UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name: SS-01	BWA	DRW	07.10.01
Permit-Seal	Dwn.	Chkd.	Desgn.

Client/Project  
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title  
SANITARY SEWER DETAILS

Project No. 2075001300 Scale NOT TO SCALE

Revision

OAK VALLEY OUTLOT  
PRELIMINARY SITE PLAN  
SANITARY SEWER DETAILS

11

JOB No. 22095

REVISIONS:

DATE: 12/13/22  
SHEET 11 OF 20  
CADD: OTS  
ENG: TPH  
PM: KEB  
TECH: JPS  
FSA

CLIENT

OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG

MIDWESTERN  
CONSULTING

3845 Plaza Drive Ann Arbor, Michigan 48108  
(734) 995-0200 • www.midwesternconsulting.com  
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M:\Civ\134\_P\o\122095\Pre\im\mery\2209501.dwg, 6/16/2023 9:36 AM, Kara J. Vuich, 12 SANITARY SEWER SPECIFICATIONS, WCLC PDF .p3

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SANITARY SEWER AND MANHOLES		
1.00	GENERAL	
1.01	DESCRIPTION	
A. The CONTRACTOR shall furnish all labor, tools, equipment and materials to construct all sanitary sewers, manholes and necessary appurtenant work as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.		
1.02	TESTING	
A. General		
1. The CONTRACTOR shall furnish all equip-ment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed and has been installed for not less than 30 days.		
2. The CONTRACTOR may desire to make an air test prior to backfill for his own purposes but the line acceptance tests shall be conducted after backfilling or extensions.		
3. All sewer lines shall be televised while running enough water through the line to be visible at the next downstream manhole.		
4. All sewer lines shall be checked for alignment.		
5. All manholes shall be tested for leakage. All PVC lines shall be tested for deflection.		
6. Sewer pipe 30 inches and smaller shall be air tested. Sewer pipe larger than 30 inches shall be tested by either infiltration or exfiltration and shall be tested in lengths of 1600 feet or less.		
7. Should the results of any test fail to meet the criteria established in this Specification, the CONTRACTOR shall, at his own expense, locate and repair rejected section and retest until it is within specified allowance.		
B. Test for Leakage - Air Test		
1. Section 33-95 (pg 30-6) 2004-Ten State Standards.		
2. After a manhole-to-manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs inflated to 35 psig internal pressure. The design of the pneumatic plugs shall be such that they will hold against the line test pressure without requiring external blocking or bracing.		
3. There shall be three (3) hose connections to the pneumatic plug. One hose shall be used only for inflation of the pneumatic plug. The second hose shall be used for continuously reading the air pressure rise in the sealed line. The third hose shall be used only for introducing low pressure air into the sealed line.		
4. There shall be a 0-30 psig gauge for reading the internal pressure of the line being tested. Calibrations from the 1-10 psig range shall be in tenths of lbs (not ounces) and this 0-10 portion shall cover 90% of the complete dial range.		
5. Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any ground water pressure that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period, the third hose shall be disconnected.		
6. The portion of line being tested shall be accepted if the portion under test meets the following conditions.		
a. DI, and RCP Pipes		
(1) The time requirement for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time given in the following table:		
	Pipe	Min. Holding Time Seconds/100 ft. Pipe
	4-inch	18
	6-inch	42
	8-inch	72
	10-inch	90
	12-inch	108
	15-inch	126
	18-inch	144
	21-inch	180
	24-inch	216
	27-inch	252
	30-inch	288
(2) In areas where ground water is known to exist, the CONTRACTOR shall install a 1/2-inch diameter capped pipe nipple, approximately 10 inches long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the line acceptance test, the ground water level shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water shall be taken after the water stops rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the lbs of pressure that will be added to all readings. For example, if the height of water is 11-1/2 ft, then the added pressure will be 5 psig. This makes the 3.5 psig to be 8.5 psig, and the 2.5 psig to be 7.5 psig. The 1 lb allowable drop and the timing remains the same.		
a. PVC Pipe		
(1) The time requirement for the pressure to decrease from 3.5 to 3.0 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than that shown in the following table:		
(inches)	Pipe Size (seconds)	Holding Time (seconds) Minimum Holding Time
	4-inch	0.190xL 113
	6-inch	0.427xL 170
	8-inch	0.760xL 227
	10-inch	1.187xL 283
	12-inch	1.709xL 340
	15-inch	2.671xL 425
	18-inch	3.846xL 512
(2) If any section of the sewer fails to meet this requirement, the CONTRACTOR shall perform a television inspection of the faulty section and repair or replace at his own expense all defective materials and/or workmanship to the satisfaction of the ENGINEER. The test procedure shall be repeated until the results are acceptable.		
C. Test for Infiltration		
1. Sewer pipe over 18 inches shall be tested to measure the infiltration of ground water. If the measured leakage exceeds 100 gallons per inch diameter per mile of pipe per 24 hr period, the CONTRACTOR shall locate the points of excessive leakage and make the necessary repairs at his own expense.		
2. In the event the line does not pass the infiltration test as stated above, the test shall be repeated after suitable repairs have been completed.		

D. Test for Exfiltration

1. Where the ground water provides less than a 2 ft head on the sewer, an exfiltration test shall be conducted by filling the sewer with water to a 4 ft head or 4 ft above the ground water level, whichever is greater. The allowable water loss shall be 100 gal/in./mi/day as calculated above for infiltration.
2. After the sewer has been filled with water, 4 hrs time shall be allowed for water absorption by the pipe before exfiltration tests are initiated.
3. For the purpose of establishing the 4 ft test head, the head shall be measured from the center of the sewer pipe at the midpoint of the test section length. This procedure shall be used for both infiltration and exfiltration tests.

E. Test for Manhole Leakage

1. All manholes shall be tested for leakage by using plugs on inletting-outletting sewers, and filling the manholes with water to the top of the man-hole. Four hours shall be allowed for water absorption by the manhole before testing is initiated. Allowable exfiltration for 48-inch diameter manholes shall be 2 gallons per foot of depth per day.

F. Test for Alignment

1. All sewers shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by shining a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

G. Test for Deflection of PVC Pipe

1. PVC pipe sewers shall be installed in such a manner that the initial deflection of the conduit shall conform to the latest revision of ASTM D-3034.
2. Deflection of PVC pipe shall be tested by pulling a rigid pig or equivalent through the pipe. The pig shall be constructed in accordance with the following table of maximum outside diameters and shall be submitted to the ENGINEER for review before testing is initiated.

Pipe I.D.	Pig O.D.
6 inches	5.33 inches
8 inches	7.11 inches
10 inches	8.87 inches
12 inches	10.55 inches
15 inches	12.90 inches
18 inches	15.74 inches

3. The pig shall be drawn by hand through the pipe from manhole to manhole. Any portion of pipe through which the pig passes freely shall be deemed to have passed the deflection test. Sections of pipe through which the pig does not pass shall be located, uni-covered and the pipe zone bedding improved and backfilled by the CONTRACTOR at his own expense. The pipe shall then be retested before acceptance is granted.

H. Material Tests

1. The CONTRACTOR shall have tests of pipe and strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.

### 1.03 SUBMITTALS

A. The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections, and valves. The Contractor shall submit certification letter for all pipe proposed on the project. The letters shall contain the following: Contractor name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

### 2.00 PRODUCTS

#### 2.01 SEWER PIPE

A. Pipe for sewer 24-inch diameter and smaller shall be polyvinyl chloride (PVC). Pipe for 30-inch diameter and larger shall be PVC truss pipe. Ductile iron pipe and reinforced concrete pipe shall be used as specified by the ENGINEER.

B. Pipe for service leads 4 though 8 inches in diameter shall be polyvinyl chloride (PVC).

C. Reinforced concrete pipe shall be no less than the latest revision of ASTM C76, with the class designation as shown on the Plans or in the Proj-posal.

D. PVC pipe 4 inches through 15 inches in diameter shall meet or exceed all of the requirements of the current ASTM D-3034 SDR-26 polyvinyl chloride sewer pipe and fittings. 18-inch diameter PVC pipe shall meet or exceed all the requirements of the current ASTM F-794 SDR 26 polyvinyl chloride sewer pipe and fittings. Samples of pipe and physical and chemical data sheets shall be submitted to the ENGINEER for review. Approval shall be obtained before pipe is purchased.

E. If the sewer pipe is greater than 15 feet deep PVC pipe shall be SDR 21.

F. Truss pipe shall meet or exceed all of the requirements of the current ASTM D2680.

G. Ductile iron pipe shall meet or exceed all the requirements of ANSI A21.50 with a cement lining.

#### 2.02 SEWER PIPE FITTINGS

A. Fittings shall be of the same material as the pipe, and in no case shall the walls be thinner than that of the pipe furnished.

B. Wye and tee fittings for PVC pipe shall be reviewed by the ENGINEER before purchasing.

C. The dry fit of all fittings must be snug. If the fit is such that it is loose, the pipe or fitting will be rejected as faulty and of improper size.

#### 2.03 SEWER PIPE JOINTS

A. Concrete pipe joints shall be made of a resilient material conforming to the latest revision of ASTM Designation C443. Proper lubricant shall be furnished by the joint manufacturer.

B. Concrete pipe for use with rubber joints shall be smooth and precisely formed to provide a uniform annular space for joint materials.

C. PVC pipe shall be jointed with ring gusseted bell ends. (ASTM-D3212) Jointing materials shall be applied to the bell end of the pipe at the point of manufacture in such a manner that a tight uniform joint will be achieved and such that when the joint is made up in the field, the joint material will not roll or tear from the pipe. A proper joint lubricant shall be furnished by the pipe manufacturer.

2.04 REINFORCED CONCRETE MANHOLES

A. Manholes shall conform to the current ASTM specifications for precast reinforced concrete manhole sections, serial designation C478. Manhole section joints shall conform to ASTM C990-96. Cone sections shall be straight side type, with an offset step configuration.

B. All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4-inches high.

C. Manholes constructed over an existing sewer line shall have a doghouse mudded to an 8-inch thick cookie. The bottom of the existing pipe shall be the channel. All other manholes shall have precast integral base sections with pre-formed concrete channels.

D. All channels shall be constructed to the full flow depth of the pipe.

#### 2.05 MORTAR FOR MANHOLES

A. Mortar for plastering manholes shall be made of one part Portland cement and two parts fine aggregate.

#### 2.06 MANHOLE FRAMES AND COVERS

A. Manhole frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each cover shall be marked with the Pittsfield Township logo and the letters, PITTSFIELD TWP SANITARY SEWER integrally cast into the cover.

B. Covers shall be of the "self-sealing" design having a continuous gasket glued in a machined groove and a concealed pickhole. Frames and covers shall be East Jordan 10402, with Type AGS cover.

C. All manhole frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.

### 2.07 MANHOLE STEPS

A. Steps shall be plastic coated steel. They shall be M.A. Industries PS1-PF or PS1-B, or approved equal.

#### 2.08 MANHOLE CONNECTIONS

A. Sewer pipe (6-inch to 24-inch) to manhole connections shall be through: 1) a flexible rubber boot which shall be securely clamped into a core-drilled pipe port. Pipe ports shall be core-drilled at the point of manhole manufacturer and shall be accurately located within 1/2-inch of proposed sewer centerline (Kor-N-Seal); or, 2) a self-adjusting mechanical pipe to manhole seal which provides a resilient flexible and infiltration-proof joint (Res-seal); or, 3) a flexible rubber wedge firmly rammed into a rubber gasket which is cast into the manhole (Press Wedge II), or equal. All flexible pipe to manhole connections shall be installed per the manufacturers specifications.

B. Neoprene rubber for the manhole boot shall meet ASTM Specification C443 and shall have a minimum thickness of 3/8-inch. Pipe clamp bands shall be of corrosion-resistant steel.

C. Sewer pipe over 24 inches to manhole connections shall be in accordance with details shown on the Plan.

#### 2.09 SANITARY MANHOLE ADJUSTMENTS

A. All final grade adjustment of manhole covers and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by LADTECH, INC. or approved equal. The adjustment rings shall be manufactured from polyethylene plastic as identified in ASTM Designation D 1248.

B. All adjustment for matching road grade shall be made utilizing a molded indexed slope ring.

C. Each adjustment ring shall be sealed with a 3/16 to ¼ inch bead of butyl rubber sealant per the manufacturer's instructions. Sealant shall meet ASTM specification C-990.

D. All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8-inch threaded rods. The rods shall be galvanized or stainless steel anchored to the structure with Redhead concrete anchors or equal. Stainless steel or galvanized nuts and washers shall be used to attach the casting.

#### 2.10 MANHOLE DROPS

A. Manhole drop connections shall be interior drops using the drop bowl as produced by Reliner-Duran Inc. or approved equal.

B. Drop bowl model A-4" shall be used for all lines up through full 6-inch inlets. Drop bowl model A-6" shall be used for all 8-inch inlets. Drop bowl model B-8" shall be used for all 10-inch inlets. Lines larger than 10 inches shall be as directed by the ENGINEER.

C. The force line hood shall be attached on models A-4" and A-6" when the incoming line is from a force main or the slope is 3 percent or greater.

D. The drop pipe shall be secured to the manhole wall with Reliner-Duran, Inc. stainless steel adjustable clamping brackets or approved equal.

E. The drop bowl and each clamping bracket shall be attached to the manhole wall with 3/8-inch x 3 3/4-inch bolts.

F. The incoming pipe shall be trimmed such that it protrudes 2 inches into the manhole .

G. A 1-inch V shaped notch shall be cut into the bottom edge of the incoming pipe.

### 3.00 EXECUTION

#### 3.01 EXCAVATION AND BACKFILL

A. All excavation and backfill above a line 12 inches above the crown of the pipe shall conform to Section 2.04, Earthwork, of these Specifications.

#### 3.02 BEDDING

A. Reference Section 33.83a of 10 State Standards.

B. Reference Section 33.83b of 10 State Standards.

C. Ductile iron, and concrete pipes shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 3 inches for 24-inch and smaller pipe and not less than 4 inches for pipe larger than 24-inch conforming to Class B bedding as shown on the Plans. Where shown on the Plans or required by the ENGINEER, concrete encasement or concrete cradle shall be used.

D. PVC pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches conforming to Class B bedding as shown on the Plans. Where shown on the Plans, or where the pipe passes under a road with less than 4 ft of cover, the pipes shall be encased.

E. For all pipes, compacted granular material shall be placed at the sides of the pipe and cover not less than 12 inches above the crown of the pipe.

F. "Granular Material" shall be class ZNS sand, pea gravel or crushed stone conforming to ASTM C33 Size No. 67 placed in not more than 6-inch layers and com-pacted to not less than 95% standard density for PVC and 90% standard density for reinforced concrete.

G. Pea gravel or crushed stone used for bedding shall be separated from the sand backfill with a non-woven geotextile fabric. The fabric shall be Amoco 4551, or approved equal.

#### 3.03 PIPE INSTALLATION

A. Installation of PVC pipe shall be in confort-mancoe with ASTM D2321-89.

B. All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress shall be kept dry; and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

C. All joints shall be made up in accordance with the manufacturer's instructions using materials and equipment especially prepared for the type of joint to be used.

D. The grade as shown on the profiles is that of the pipe invert and that to which the work must conform. The grade shall be kept by levels, laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall, as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

E. The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities, or structures. Any change in location or alignment of piping which may be found more feasible or practicable as the work progresses shall be made by the CONTRACTOR, as the ENGINEER may direct.

F. All pipe and fittings shall be carefully lowered and moved into position in trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or lining. An excessive amount of scratching on the surface of the PVC pipe will be considered cause for rejection.

G. The trench shall be backfilled closely behind the pipe laying. Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench within two pipe lengths behind pipe laying.

H. All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine tooth saw, tubing cutter or similar tool may be used to cut PVC pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

I. After cutting bell and spigot or socket pipe, a stop mark shall be made with a pencil or crayon using dimensions as shown by the manufacturer's instructions or by using another pipe in the field as a guide.

J. Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

#### 3.04 CONNECTIONS TO EXISTING MANHOLES AND OTHER RIGID STRUCTURES

A. When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall be cut into the manhole.

B. If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2-inch mortar coat on the outside surface.

C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be clamped into the cored hole and used to make the connection.

D. For connections to existing fiberglass manholes, a hole shall be cored into the manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be installed using fiberglass reinforced pipe stubout for Kor-N-Seal boot sealing surface.

### 3.05 STREAM AND RIVER CROSSING

A. Whenever a pipe is required to cross a stream or river, all work shall be in accordance with the provisions of Act 346, the Inland Lakes and Streams Act of 1962, and the rules and regulations promulgated thereunder. Stream crossings and all restoration required shall be completed within five days of the construction.

B. The CONTRACTOR shall utilize such con-struction methods as are feasible and practicable to divert or stop stream flow to lay the pipe in the dry. Pipe shall be ductile iron, mechanical joint, or compression gasket joint pipe with joints at transition to other types of sewer pipe encased with no less than 1 cu yd of concrete, placed at a minimum of 6 inches thickness around the pipe. After the sewer is properly laid, jointed and encased, the stream-channel shall be cleaned of dirt and debris resulting from the CONTRACTOR's operations.

C. After the crossing is made, heavy riprap and sodding shall be placed to protect the banks from corrosion as shown on the Plans.

PCT July 2008



Pittsfield Charter Township  
6201 W. Michigan Ave.  
Ann Arbor, MI 48108-9721  
48108-9721  
Tel. 734.822.3101  
www.pittsfield-mi.gov

TWP REV	BWA	DRW	11.04.27
UPDATES	BWA	DRW	10.10.25
UPDATES	TIN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name: SS-02	BWA	DRW	DRW 07.10.01
	Dwn.	Chkd.	Dsgn. YY.MM.DD
Permit-Seal			

Client/Project

PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title

SANITARY SEWER SPECIFICATIONS

Project No.  
2075001300

Scale  
NOT TO SCALE

Revision

1

OAK VALLEY OUTLOT  
PRELIMINARY SITE PLAN  
SANITARY SEWER SPECIFICATIONS

12

JOB No. 22095

REVISIONS:

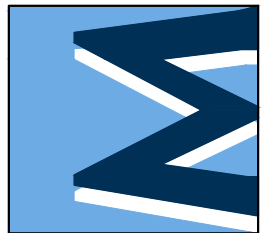
DATE: 12/13/22	SHEET 12	OF 20
REV. DATE	CADD: CTS	ENG: TPH
	ENG: TPH	PK: KEB
	PK: KEB	TECH: JWB
	TECH: JWB	FILE: 2209501.dwg
	FILE: 2209501.dwg	FIG: 12

CLIENT

OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG

MIDWESTERN CONSULTING

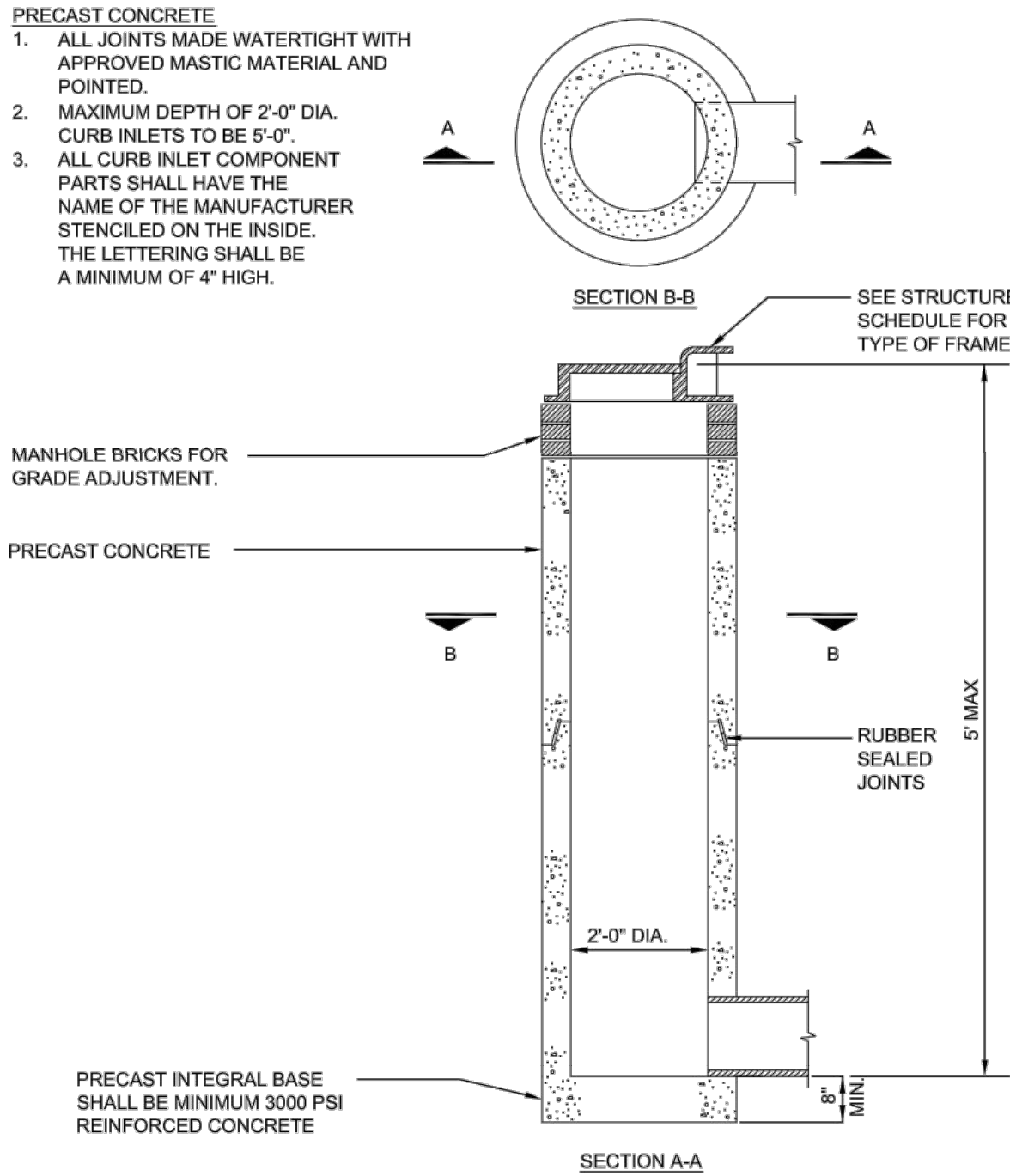
3845 Plaza Drive Ann Arbor, Michigan 48108  
(734) 995-0200 • www.midwesternconsulting.com  
Land Development • Land Survey • Institutional • Municipal  
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M:\Civil\134\_P\0122095\Pre\Im\mry\2209501.dwg, 6/16/2023 9:36 AM, Kara J. Vuich, 13 STORM SEWER DETAILS AND SPECIFICATIONS, MCLC PDF, .pc3  
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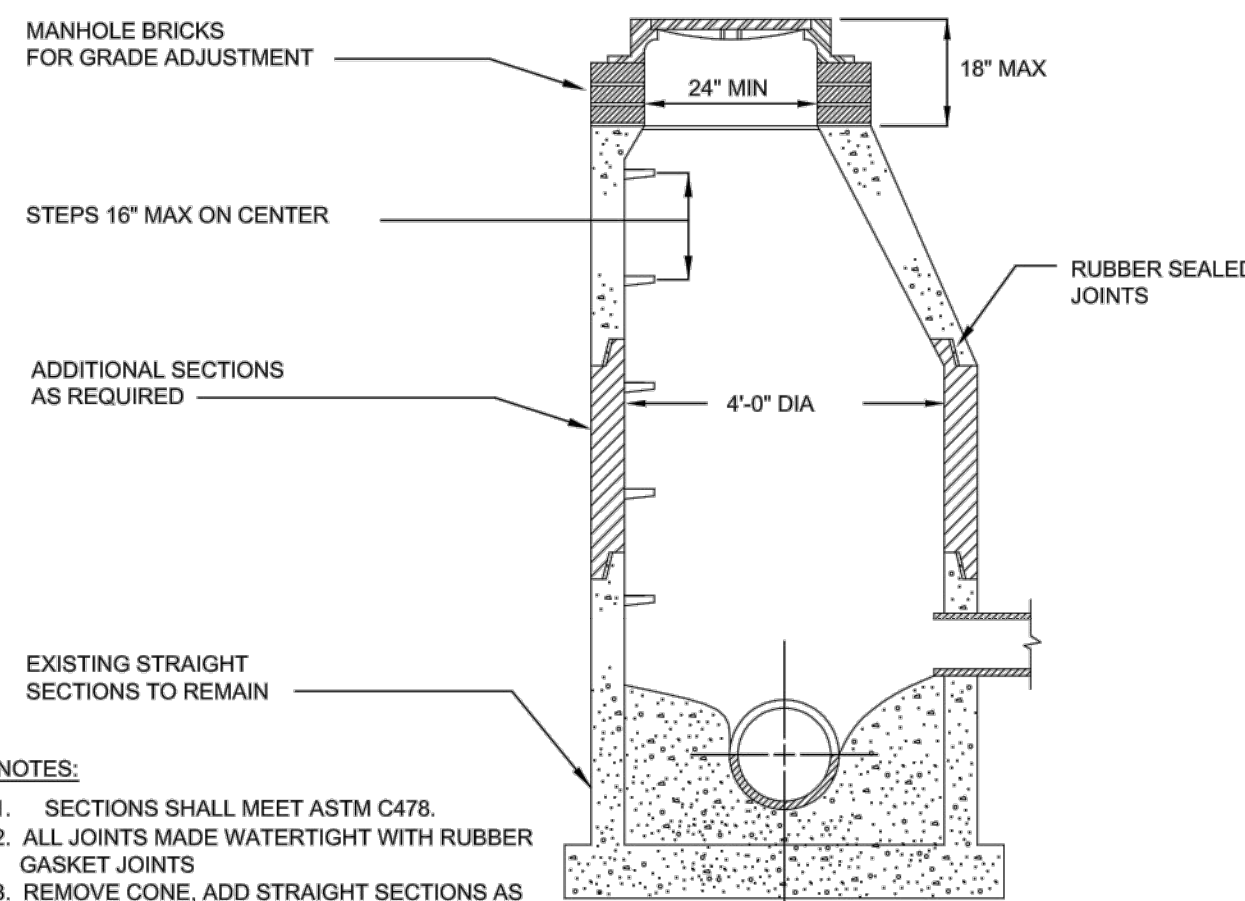
- 1.00 GENERAL**
- 1.01 DESCRIPTION**
- A. Furnish all labor, tools, equipment and materials to construct all storm sewers, and drainage structures as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.
- 1.02 TESTING**
- A. General
1. The CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed or just prior to placing the line in service providing the sewer pipe has been installed for not less than 30 days.
- B. Test for Alignment
1. All sewers shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by shining a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.
- C. Material Tests
1. The CONTRACTOR shall have tests of pipe strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.
- D. Submittals
1. The CONTRACTOR shall submit shop drawings, or data sheets for all castings, steps and manholes.
2. The CONTRACTOR shall submit certification letters for all pipes. All letters must contain the following: Contractors name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.
- 2.00 PRODUCTS**
- 2.01 PIPE**
- A. Reinforced concrete pipe and manhole tees shall be no less than the latest revision of ASTM C76, with the class designation as shown on the Plans or in the Proposal.
- B. Concrete pipe shall have tongue and groove gasketed premium joints.
- C. Corrugated steel pipe shall meet the requirements of AASHTO M-190 for coated pipe latest revision. Minimum gage thickness shall be as shown on the Plans.
- 2.02 REINFORCED CONCRETE MANHOLES**
- A. Manholes shall conform to the current ASTM Specifications for precast reinforced concrete Manhole Sections, serial designation C478. Manhole section joints shall conform to ASTM Designation C990. All cones shall be eccentric with an offset step configuration. Concrete adjustment rings or riser rings shall not be used for adjusting the height of the structure.
- B. All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4 inches high.
- 2.03 MORTAR FOR MANHOLES**
- A. Mortar for plastering manholes and drainage structures shall be made of one part Portland cement and two parts fine aggregate.
- 2.04 BRICK AND BLOCK**
- A. Brick for brick and mortar structures shall conform to the current ASTM Specification C32. Block for block and mortar structures shall conform to the current ASTM Specification C135.
- B. The concrete block masonry used to construct manhole and catch basin walls shall be solid curved blocks with the inside and outside surfaces curved to the required radii. The blocks shall have tongue and groove or other approved type of joint at the ends so that the units interlock to form a strong, rigid structure. Curved blocks shall have the inside and outside surfaces parallel.
- C. The block shall not exceed 18 inches in length or 8 inches in depth (height). No block shall be less than 6 inches in width (thickness). All blocks in one structure shall be of the same height dimension. The blocks shall be designed for length so that only full-length or half-length blocks are required to lay the circular wall of any one course.
- D. Blocks intended for use in the cones or tops of manholes and catch basins shall have such shape as may be required to form the structure as shown on the Plans with inside and outside joint not to exceed 1/4-inch in thickness.
- 2.05 STRUCTURE FRAMES AND COVERS**
- A. Structures frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each solid manhole cover shall be marked Storm Sewer with letters integrally cast into the cover.
- B. Frames and Covers shall be as follows:
1. For use on manholes: East Jordan 1040Z, with Type B cover lettered "STORM SEWER", or equal. Structures 24-inches in diameter shall have the 1045 Z frame.
2. For use on drainage structures in paved areas: East Jordan 1040Z, with Type M1 cover, with "DUMP NO WASTE" lettering and trout logo.
3. For use on drainage structures in curbed areas: East Jordan 7045 or 7065, with "DUMP NO WASTE" lettering and trout logo.
4. For use on drainage structures in landscaped areas: East Jordan 1040Z, with 1040 N 7", with "DUMP NO WASTE" lettering and trout logo.
- C. All frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.
- D. All covers for drainage structures shall have storm drain markers affixed to the nearest available flat surface. The storm drain markers shall be manufactured by Das Manufacturing and shall be #SDR "No Dumping, Drains to River." The storm drain markers shall be installed per the manufacturer's recommendations.

- 2.06 MANHOLE STEPS**
- A. Steps shall be plastic coated steel. They shall be M.A. Industries PS1-PF for precast manholes, PS1-B for block manholes, or equal.
- 2.07 DRAINAGE STRUCTURES**
- A. All manholes and catch basins shall be precast unless otherwise specified.
- B. Manhole and catch basin bottoms shall be concrete and top of slab shall have a troweled finish.
- C. Upon approval by the ENGINEER, the manhole and catch basin walls may be constructed of concrete block masonry or concrete manhole pipe conforming to the requirements of the specifications previously listed. Construction shall be in accordance with the details for Catch Basin and Storm Sewer Manhole shown on the Plans.
- D. A plaster coat of mortar 1/2-inch in thickness shall be applied to the inside and outside surface of all manholes and catch basins constructed with concrete block masonry or sewer brick. The inside coat of mortar shall be applied in a smooth, neat workmanlike manner.
- E. Final adjustment of the top of manholes and catch basins, so that the manhole or catch basin cover is at finished elevations as shown on the Plans or meets the finished surface, may be accomplished with sewer brick conforming to the previously listed Specifications. The total height of brick for this purpose shall not exceed 9 inches. The total chimney height shall not exceed 18 inches.
- F. All block and brick masonry units shall be laid in a full bed of mortar. The inside joints of the block masonry construction shall be tooled in a neat and workmanlike manner.
- 3.00 EXECUTION**
- 3.01 EXCAVATION AND BACKFILL**
- A. All excavation and backfill 12 inches above the crown of pipe shall conform to Section 2.04, Earthwork of these specifications.
- B. The trench shall be backfilled closely behind the pipe laying. Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench within four pipe lengths behind pipe laying.
- 3.02 BEDDING**
- A. Concrete pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches. Where indicated on the Plans or required by the ENGINEER, concrete encasement or cradle shall be used.
- B. For all pipes, compacted aggregate material shall be placed at the sides of the pipe in 12-inch lifts and cover not less than 12 inches above the crown of the pipe.
- C. "Granular Material" shall be MDOT class II, placed in not more than 6-inch layers and compacted to not less than 90% standard density.
- 3.03 PIPE INSTALLATION**
- A. All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress, shall be kept dry, and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphail.
- B. The grade as shown on the profiles is that of the pipe invert and that to which the work must conform. The grade shall be kept by laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall, as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.
- C. The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities or structures. Any change in location or alignment of piping, which may be found more feasible or practicable as the work progresses, shall be made by the CONTRACTOR, as the ENGINEER may direct.
- D. All pipe shall be carefully lowered and moved into position in trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or lining. An excessive amount of scratching on the surface of the concrete pipe will be considered cause for rejection.
- E. All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine tooth saw, tubing cutter or similar tool may be used to cut concrete pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.
- F. Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.
- 3.04 CONNECTIONS TO EXISTING MANHOLES**
- A. When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall be cored into the manhole.
- B. If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2-inch mortar coat on the outside surface.
- C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. Reinforcing steel shall not be cut out shall be bent and replaced in the area that is to be patched. A form shall be constructed over the area of pipe penetration. The formed area shall then be filled with concrete.
- D. Closure of the manhole wall shall be made watertight using concrete.
- 3.05 ANIMAL GRATES**
- A. Animal grates shall be required on all endsections greater than 12-inch diameter.

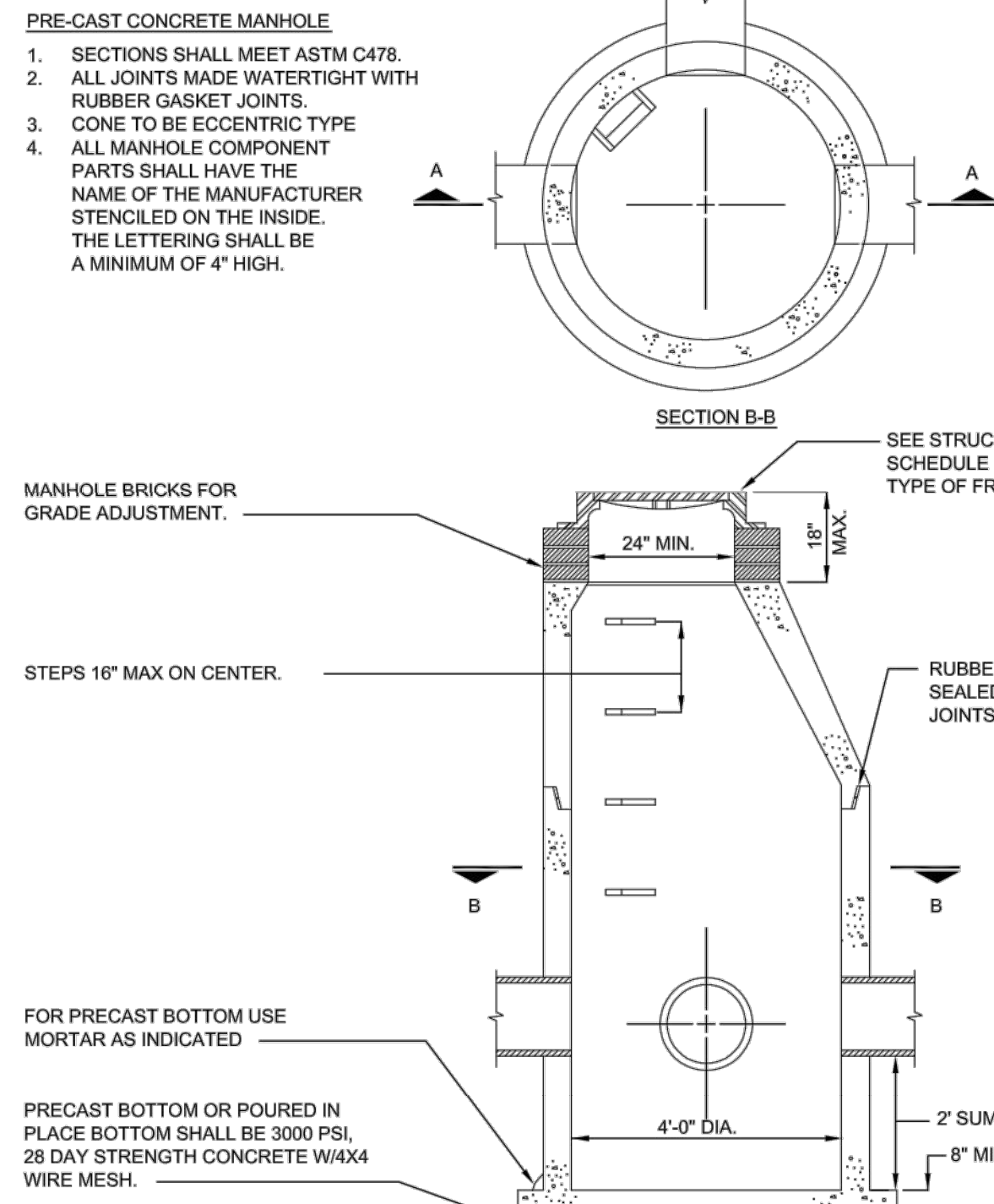


AFFIX TO SURFACE ON OR NEAR ALL DRAINAGE COVERS.

STORM DRAIN MARKER

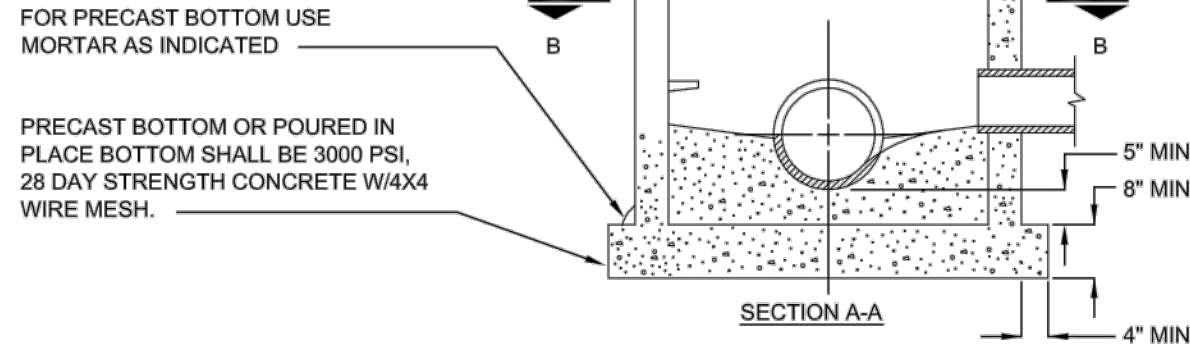


MANHOLE & CATCH BASIN RECONSTRUCTION DETAIL



- PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
  2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
  3. CONE TO BE ECCENTRIC TYPE
  4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.

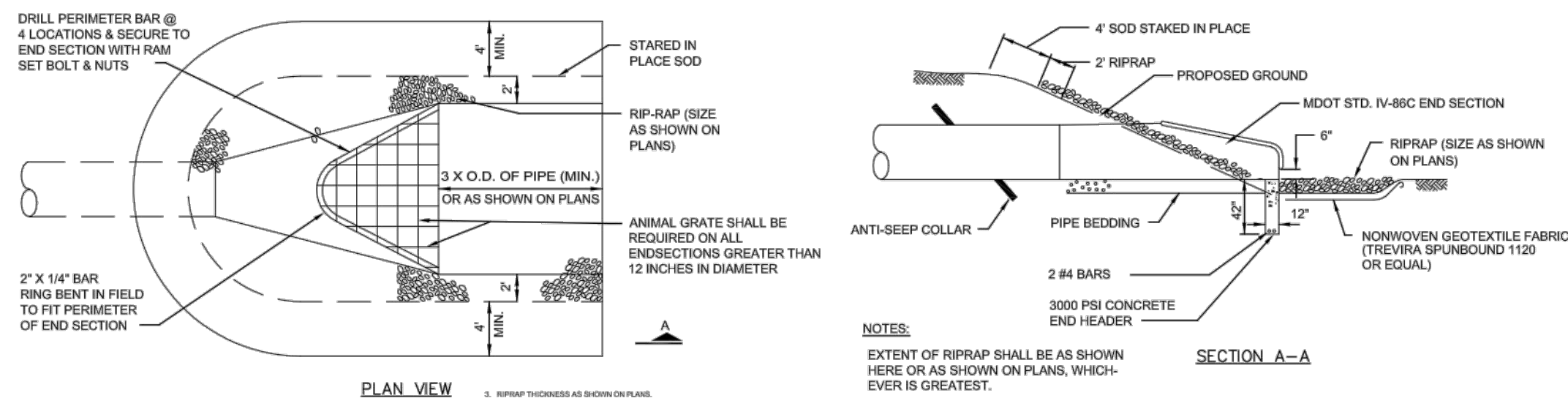
PIPE SIZE	MANHOLE DIAMETER
12"-24"	4'-0" MIN.
30"-36"	5'-0" MIN.
42"-48"	6'-0" MIN.



NOTE:  
FLARED END SECTIONS SHALL BE MANUFACTURED TO THE CLASS SPECIFICATIONS AS THE PIPE ITSELF.

STANDARD END SECTIONS FOR PRECAST CONCRETE

DIA	A	B	C	D	E	F	G
12"	5"	13"	45.5"	72"	24"	2"	2"
15"	7"	16"	43.5"	72"	30"	2.25"	2.25"
18"	11"	19"	41.5"	72"	36"	2.5"	2.5"
24"	12"	25"	29"	72"	48"	3"	2"
30"	14"	31"	19"	72"	60"	3.5"	3.5"
36"	17"	37"	34.5"	96"	72"	4"	4"
42"	22"	43"	32.5"	96"	78"	4.5"	4.5"
48"	24"	49"	23.5"	96"	84"	5"	5"



END SECTION AND RIPRAP DETAIL



Pittsfield Charter Township  
6201 W. Michigan Ave.  
Ann Arbor, MI 48108-9721  
48108-9721  
Tel. 734.822.3101  
www.pittsfield-mi.gov

UPDATES	MRH	DRW	14.01.24
TWP REV	BWA	DRW	12.08.09
TWP REV	BWA	DRW	11.04.27
UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD

Issued

File Name: ST-01

Permit-Seal

Client/Project  
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

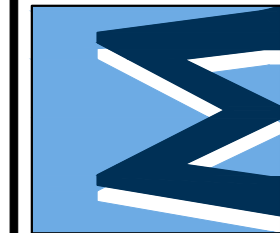
Title  
STORM SEWER DETAILS AND SPECIFICATIONS

Project No.  
2075001300

Scale  
NOT TO SCALE

Revision

MIDWESTERN CONSULTING  
3845 Plaza Drive Ann Arbor, Michigan 48108  
(734) 995-0200 • www.midwesternconsulting.com  
Land Development • Land Survey • Institutional • Municipal  
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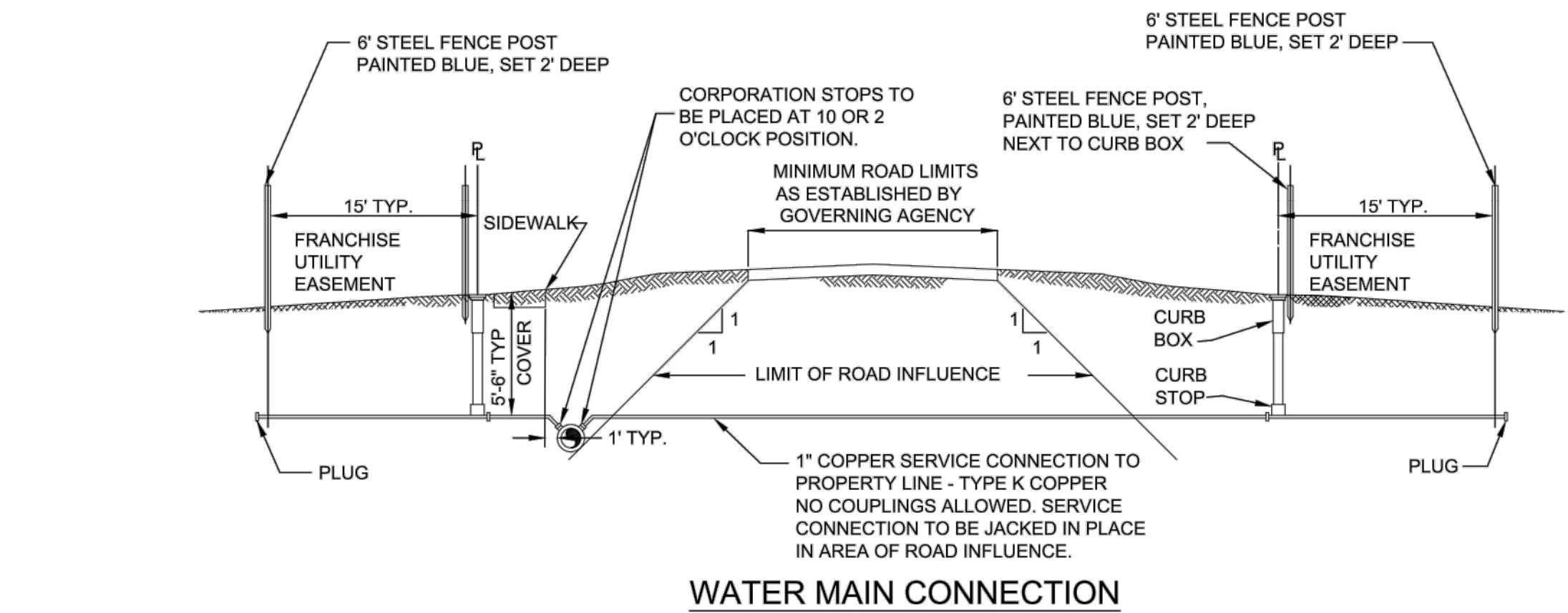
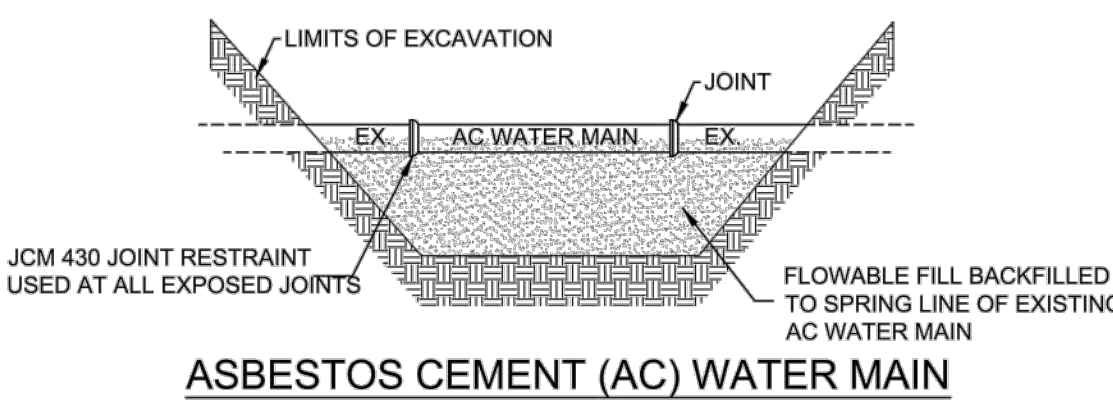
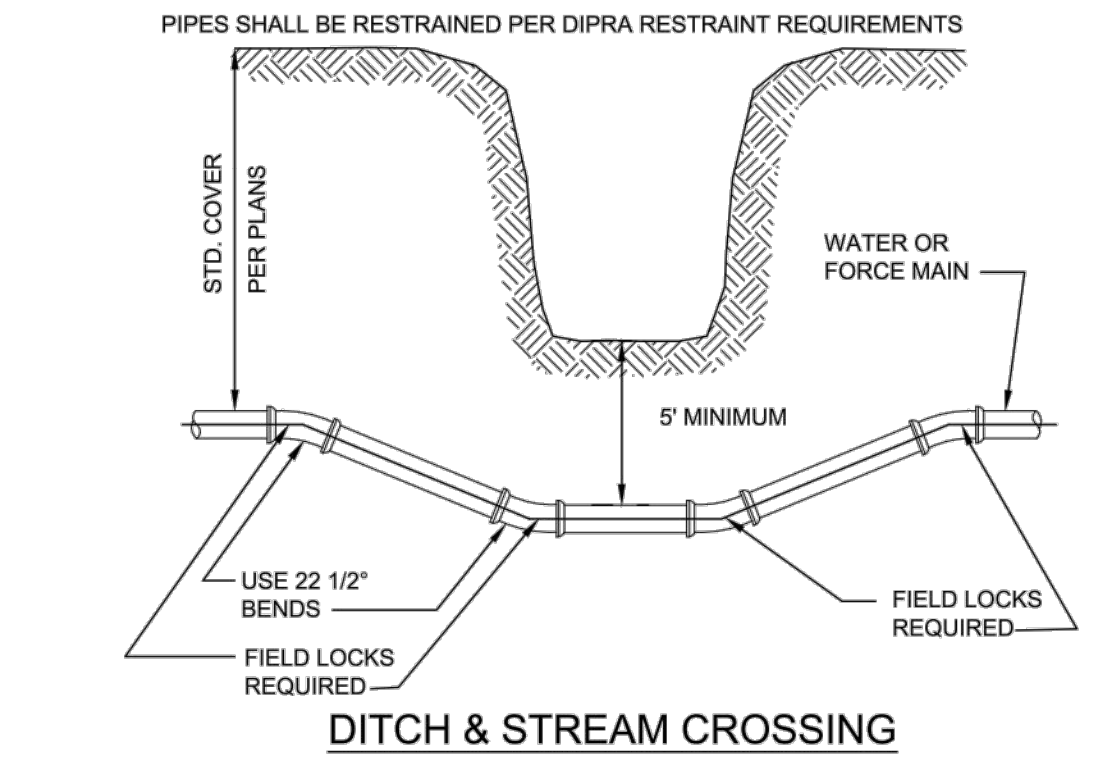
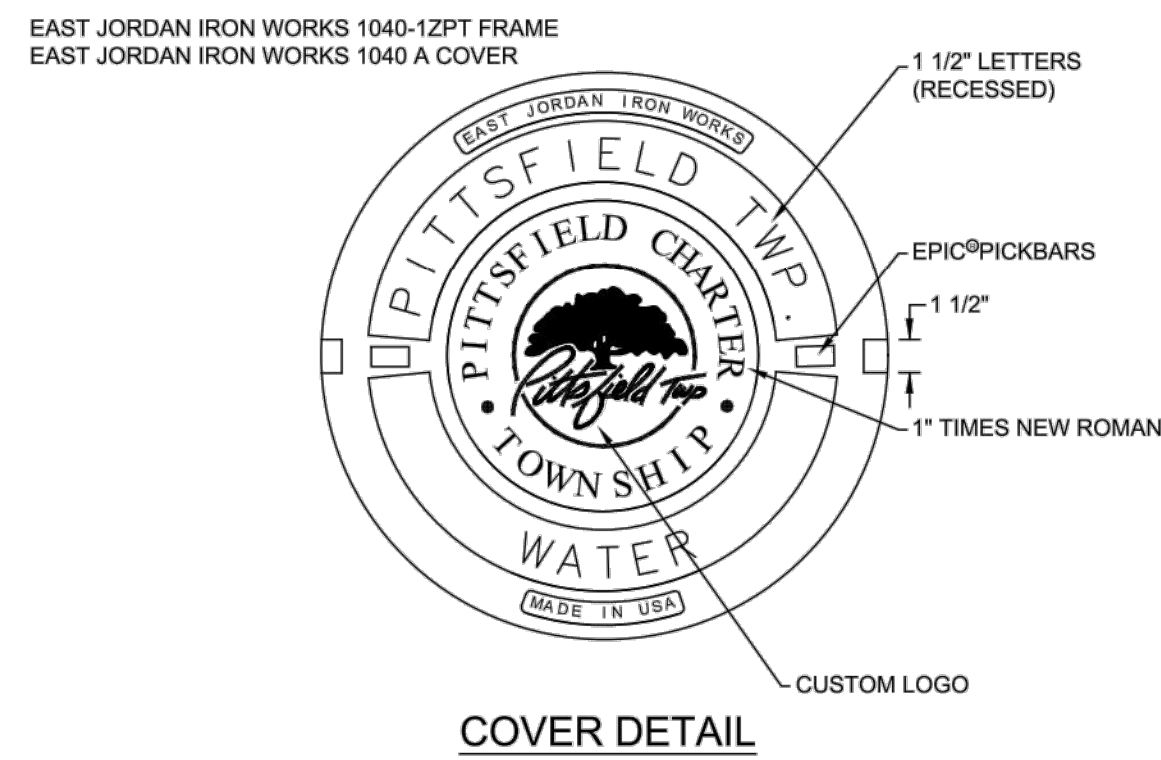
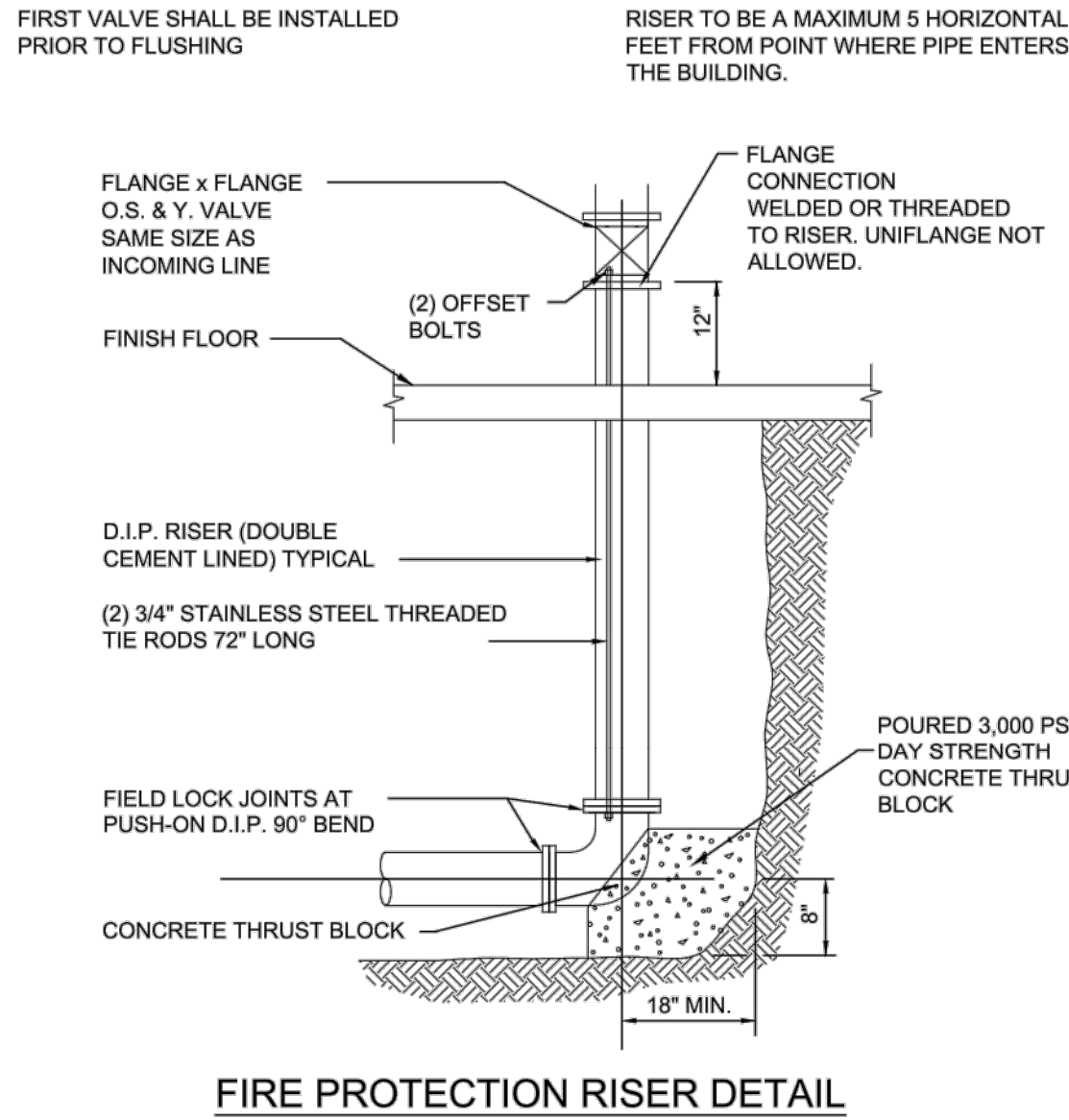


CLIENT  
OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG

OAK VALLEY OUTLOT  
PRELIMINARY SITE PLAN  
STORM SEWER DETAILS AND SPECIFICATIONS

13

JOB No.	22095
REVISIONS:	
DATE: 09/16/22	SHEET 13 OF 20
REV. DATE	REV. DATE
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PM: KEB	TECH: KEB
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PIPE DIA. INCHES	ELBOWS			
	90°	45°	22 1/2°	11 1/4°
4	2.1	1.1	0.6	0.3
6	4.1	2.2	1.1	0.6
8	6.8	3.7	1.9	0.9
10	10.1	5.5	2.8	1.4
12	14.1	7.6	3.9	2.0
16	24.2	13.0	6.7	3.3
18	30.0	16.3	8.3	4.2
20	36.8	19.9	10.1	5.1

PIPE DIA. INCHES	TEES, CROSSES & HYDRANTS	
	BEARING AREA SQUARE FEET	BEARING AREA SQUARE FEET
4		1.5
6		2.9
8		4.8
10		7.1
12		10.0
16		17.1
18		21.0
20		26.0

NOTES:

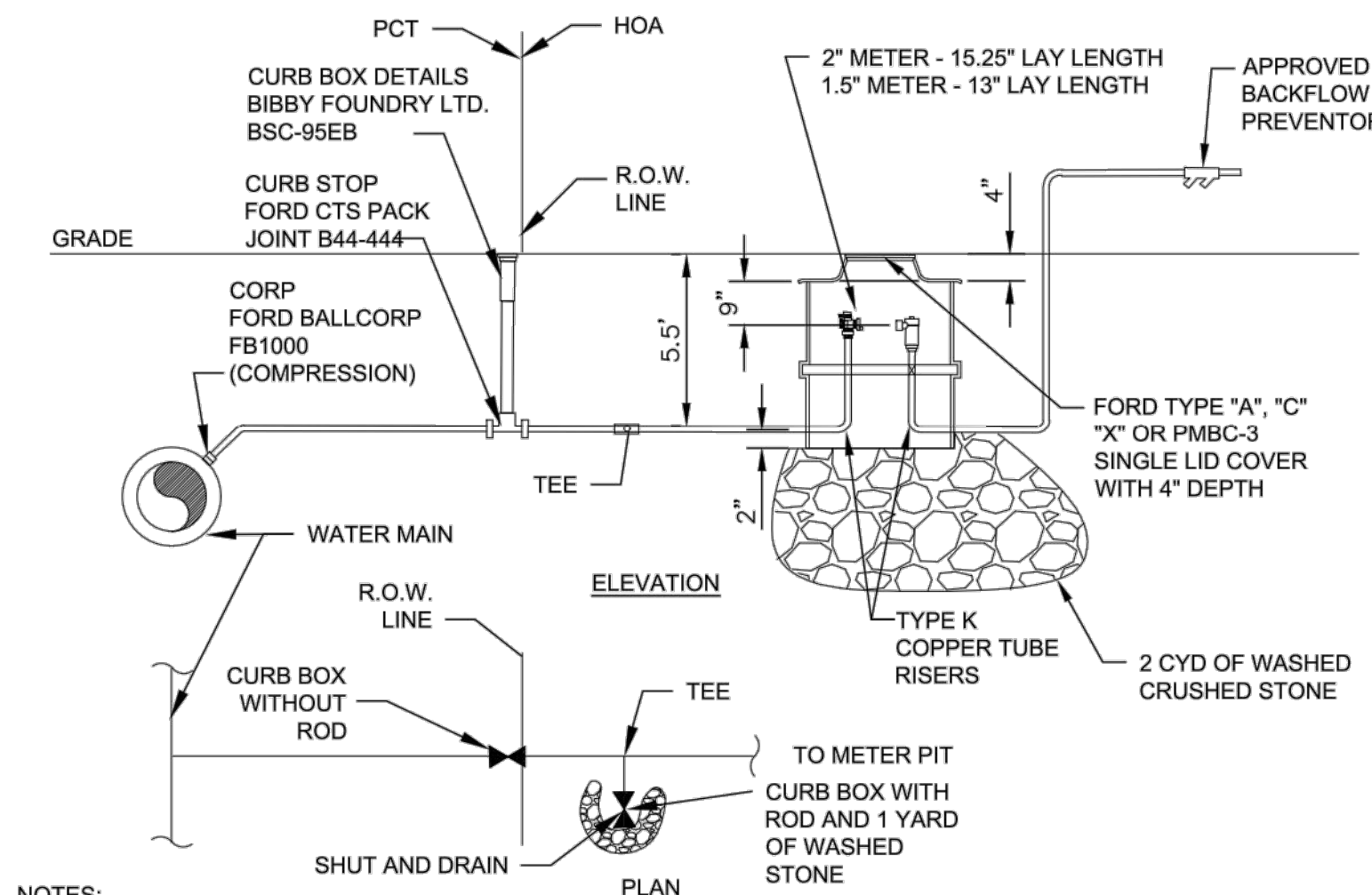
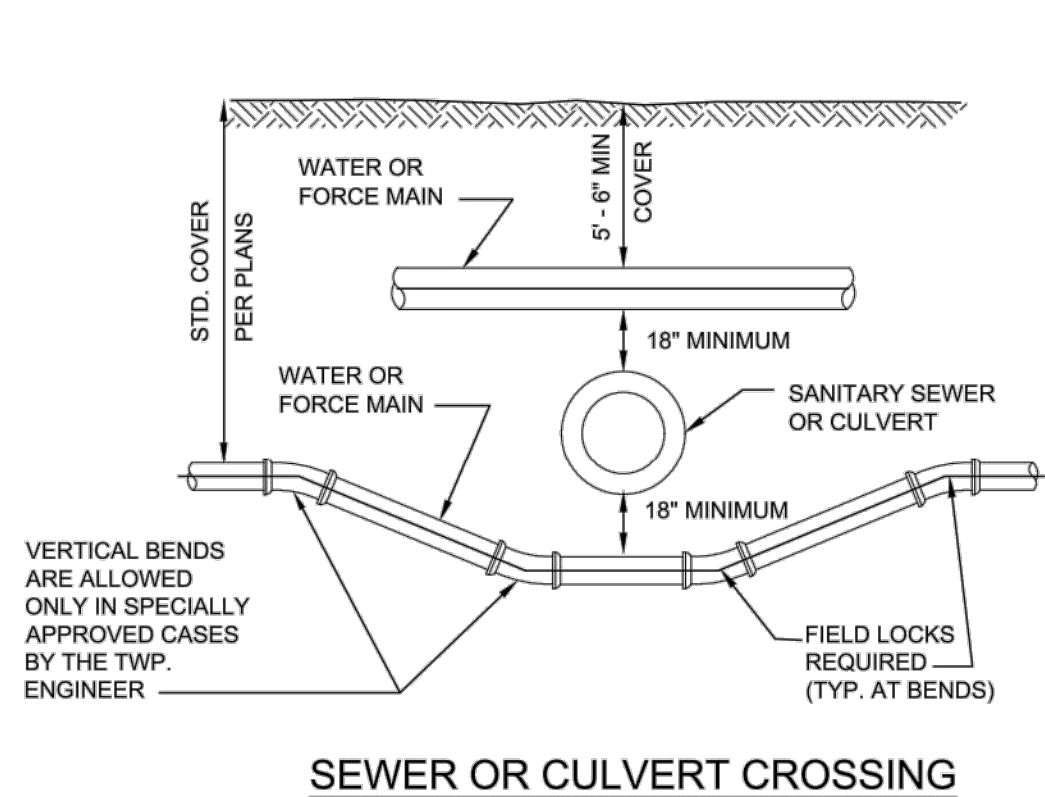
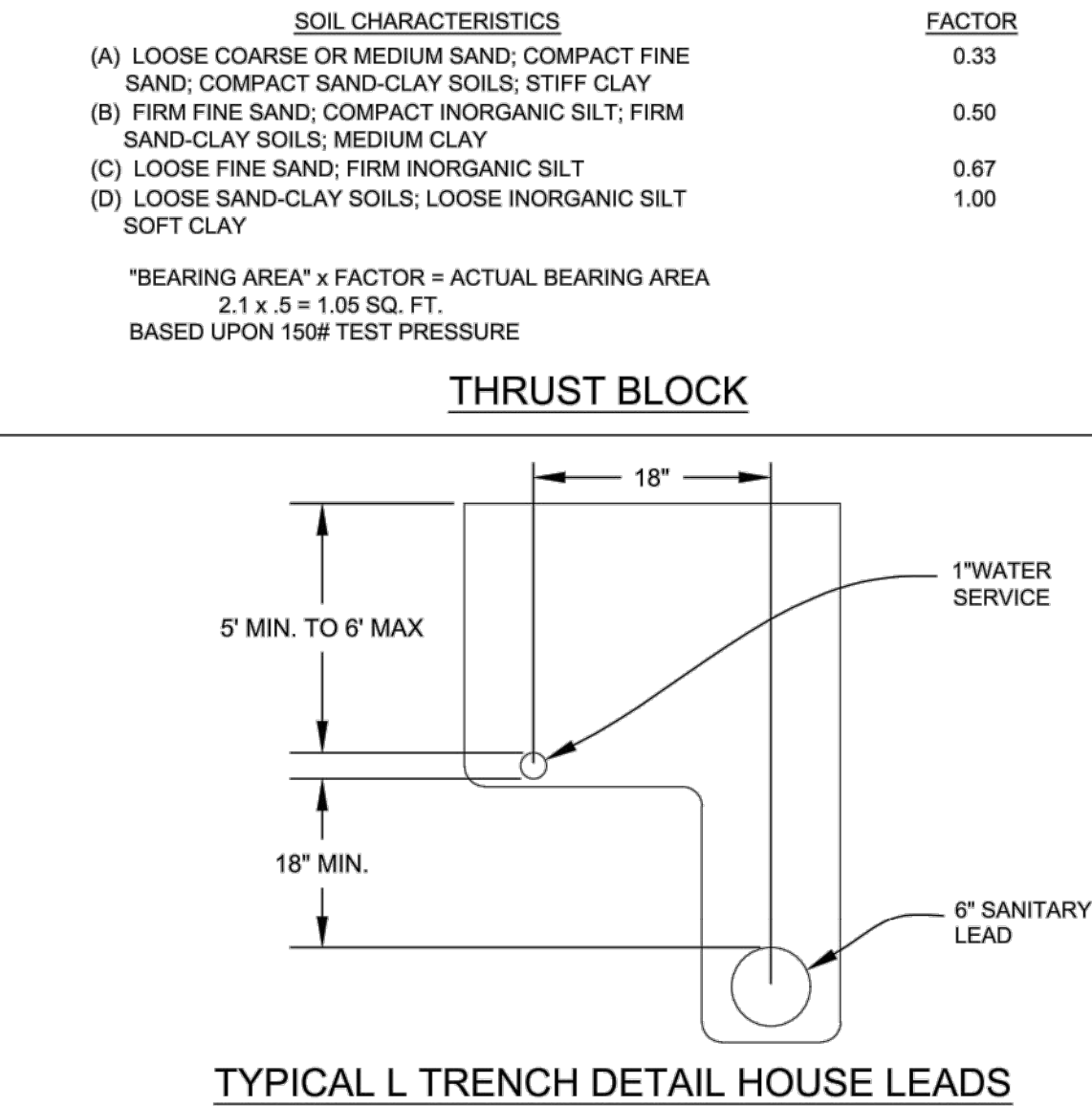
- CONCRETE FOR ALL THRUST BLOCKS SHALL BE 3000 PSI, 28 DAY STRENGTH MIN.
- ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH
- BOLTS, FITTINGS & JOINTS SHALL BE KEPT CLEAR OF CONCRETE
- A BEARING CAPACITY OF 2000# PER FOOT WAS USED IN DETERMINING THE MINIMUM "BEARING AREAS" IN THE ABOVE TABLE
- THE CROSS SECTION OF THE THRUST BLOCKS SHALL BE SQUARE
- IN ADDITION TO THRUST BLOCKS, ALL PIPE JOINTS SHALL BE RESTRAINED WITH LOCKING GASKETS PER DIPRA'S STANDARDS.

SOIL CHARACTERISTICS

	FACTOR
(A) LOOSE COARSE OR MEDIUM SAND; COMPACT FINE SAND; COMPACT SAND-CLAY SOILS; STIFF CLAY	0.33
(B) FIRM FINE SAND; COMPACT INORGANIC SILT; FIRM SAND-CLAY SOILS; MEDIUM CLAY	0.50
(C) LOOSE FINE SAND; FIRM INORGANIC SILT	0.67
(D) LOOSE SAND-CLAY SOILS; LOOSE INORGANIC SILT SOFT CLAY	1.00

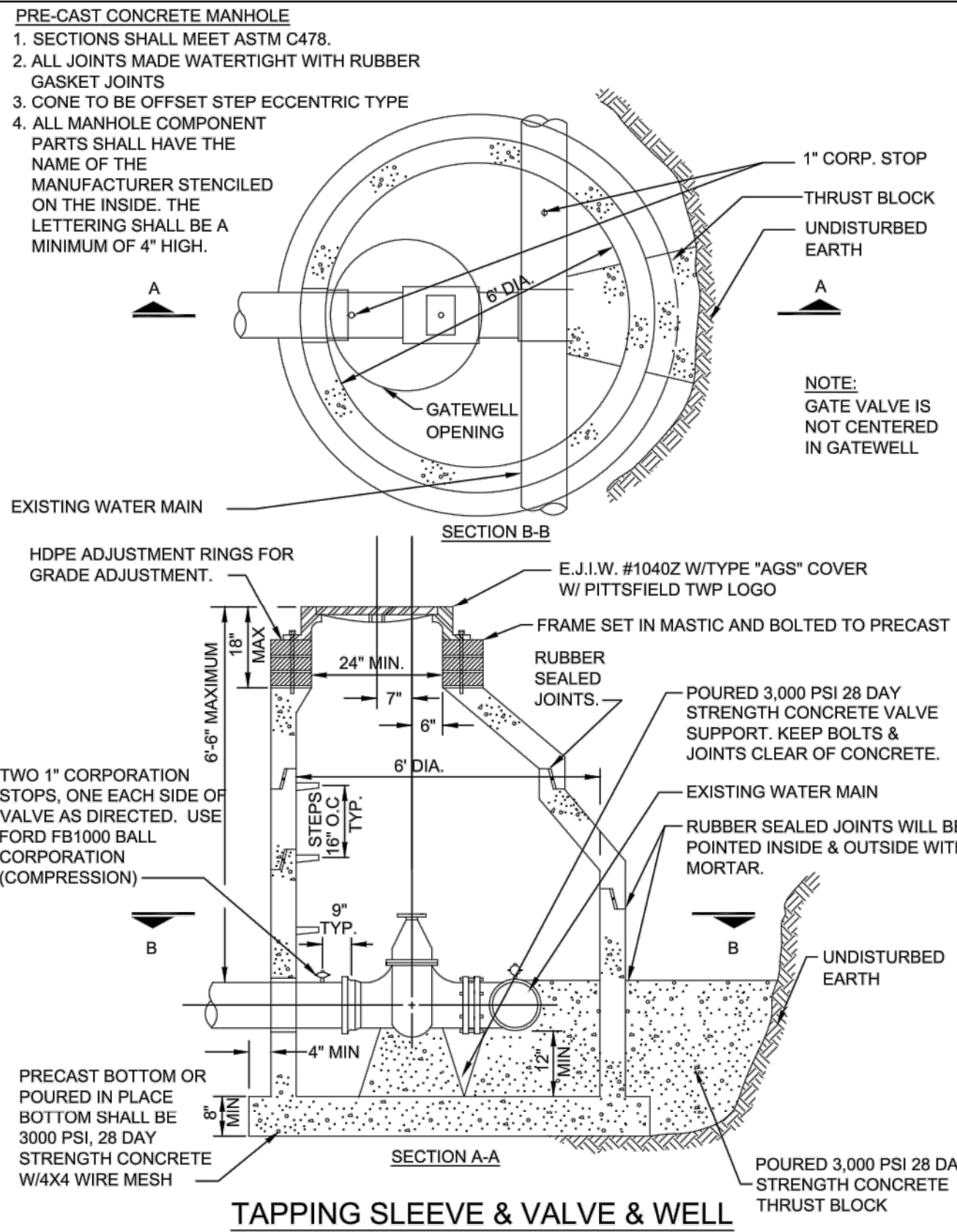
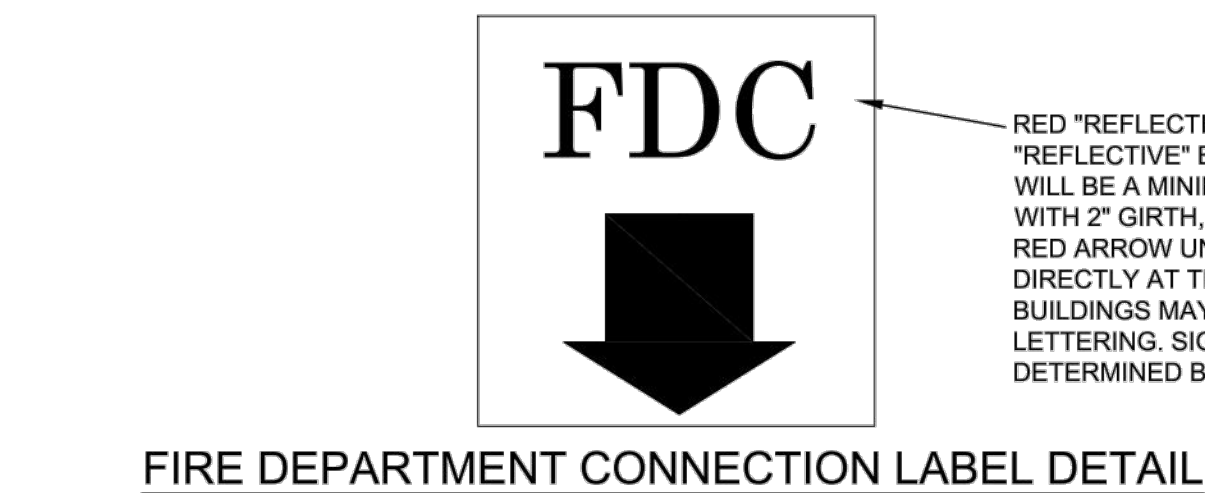
"BEARING AREA" x FACTOR = ACTUAL BEARING AREA  
2.1 x .5 = 1.05 SQ. FT.  
BASED UPON 150# TEST PRESSURE

**THRUST BLOCK**



- NOTES:
- SADDLE MAY BE REQUIRED ON MAIN BASED ON LEAD SIZE, MAIN SIZE, AND MAIN PRESSURE
  - ALL WATER MAIN TAPS AND COMPONENT PARTS SHALL BE APPROVED BY THE PITTSFIELD TOWNSHIP UTILITIES DEPARTMENT PRIOR TO INSTALLATION.
  - INSTALLATION SHALL BE INSPECTED AND APPROVED BY THE PITTSFIELD TOWNSHIP UTILITIES DEPARTMENT.

**IRRIGATION METER PIT DETAIL**



12" BACKFILL

W

B

CLASS B

FIRST CLASS BEDDING

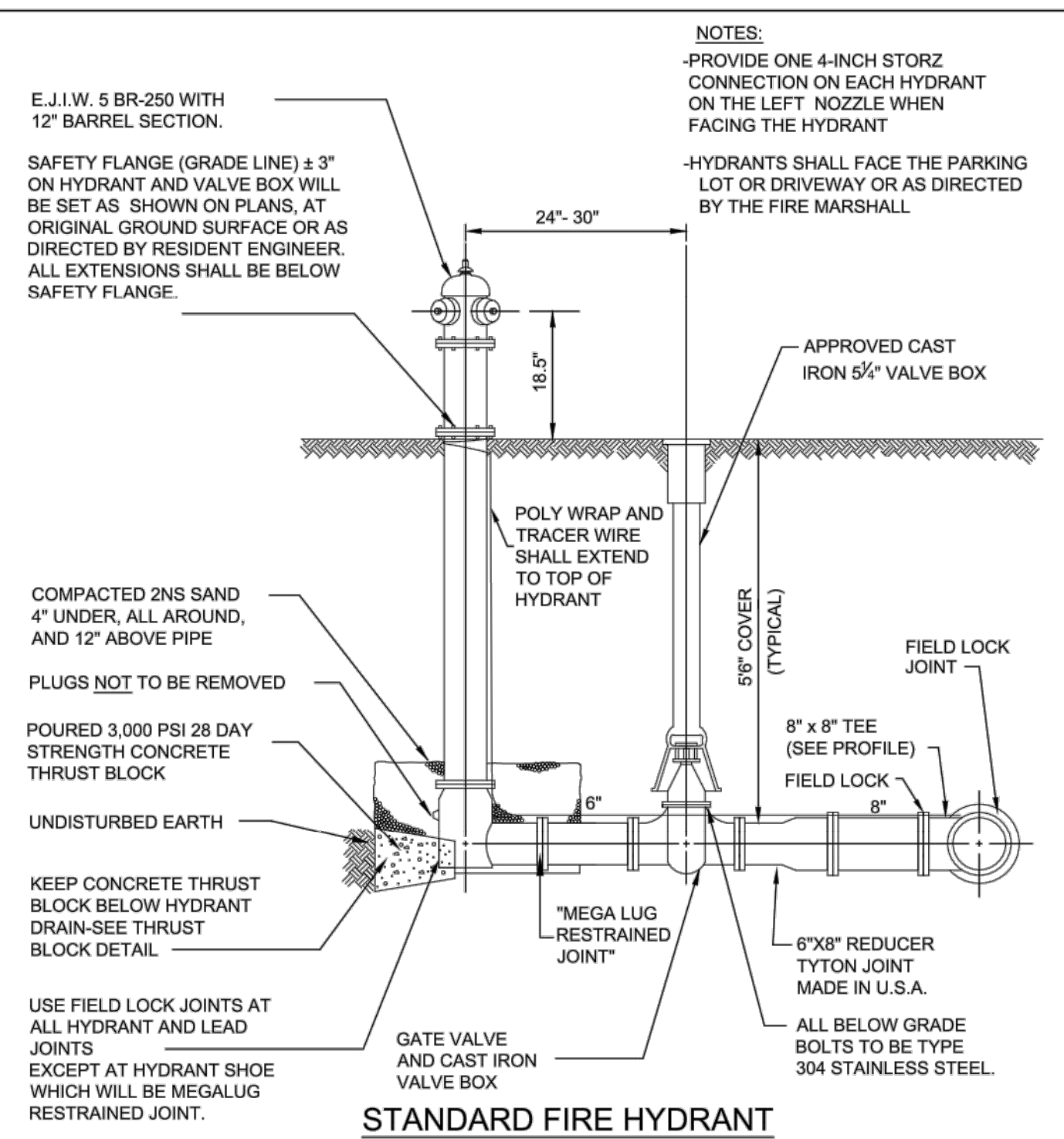
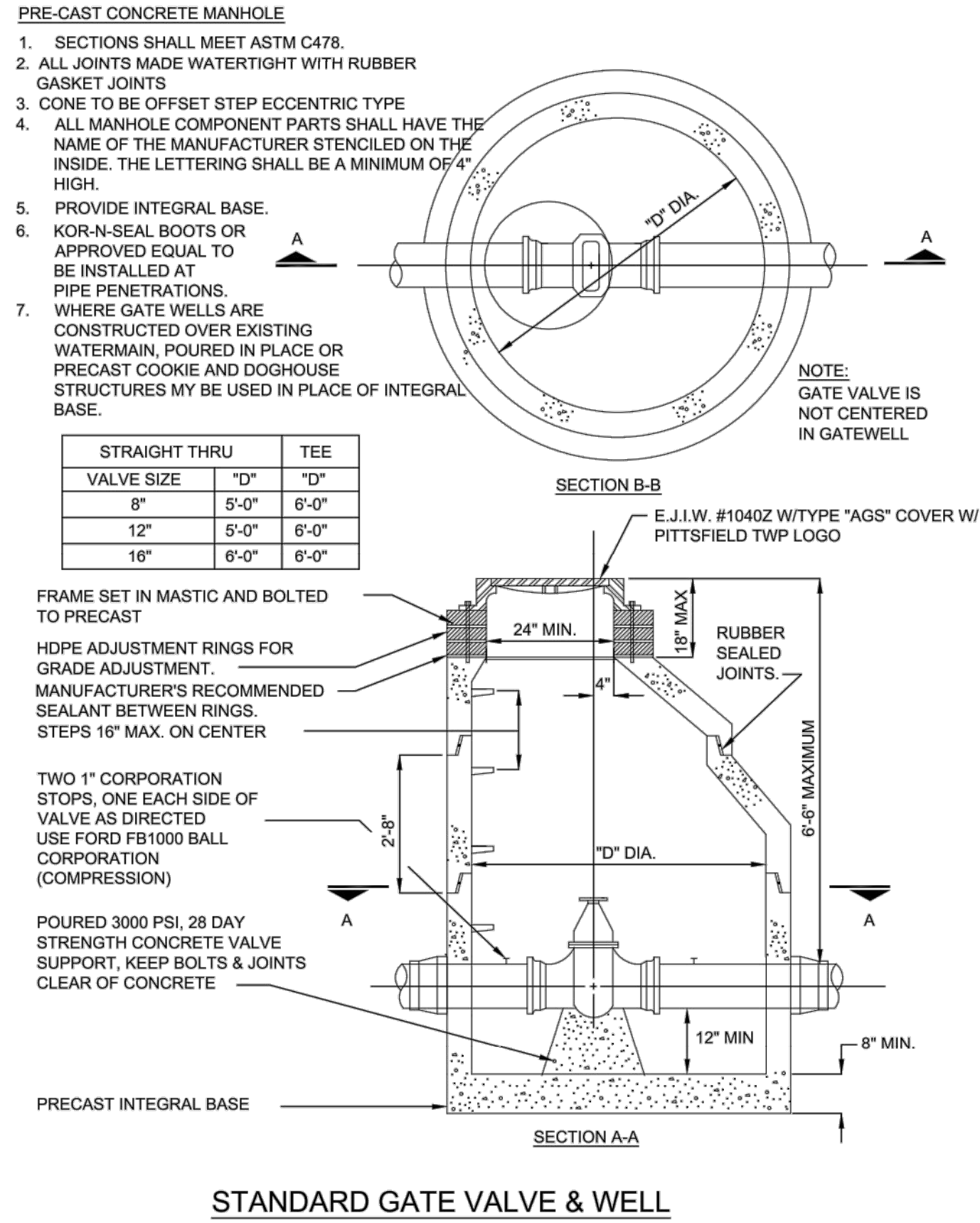
ALL BEDDING TO BE 2NS SAND

PIPE	D	W	B
PVC	0"-12"	12" MIN. 18" MAX.	4"
A-C.V.C.P.	0"-12"	6" MIN. 12" MAX.	4"
DIP	0"-24"	6" MIN. 12" MAX.	4"
A-C.CONC.	0"-24"	6" MIN. 12" MAX.	4"
CONC. DIP	24" +	6" MIN. 12" MAX.	4"

NOTES:

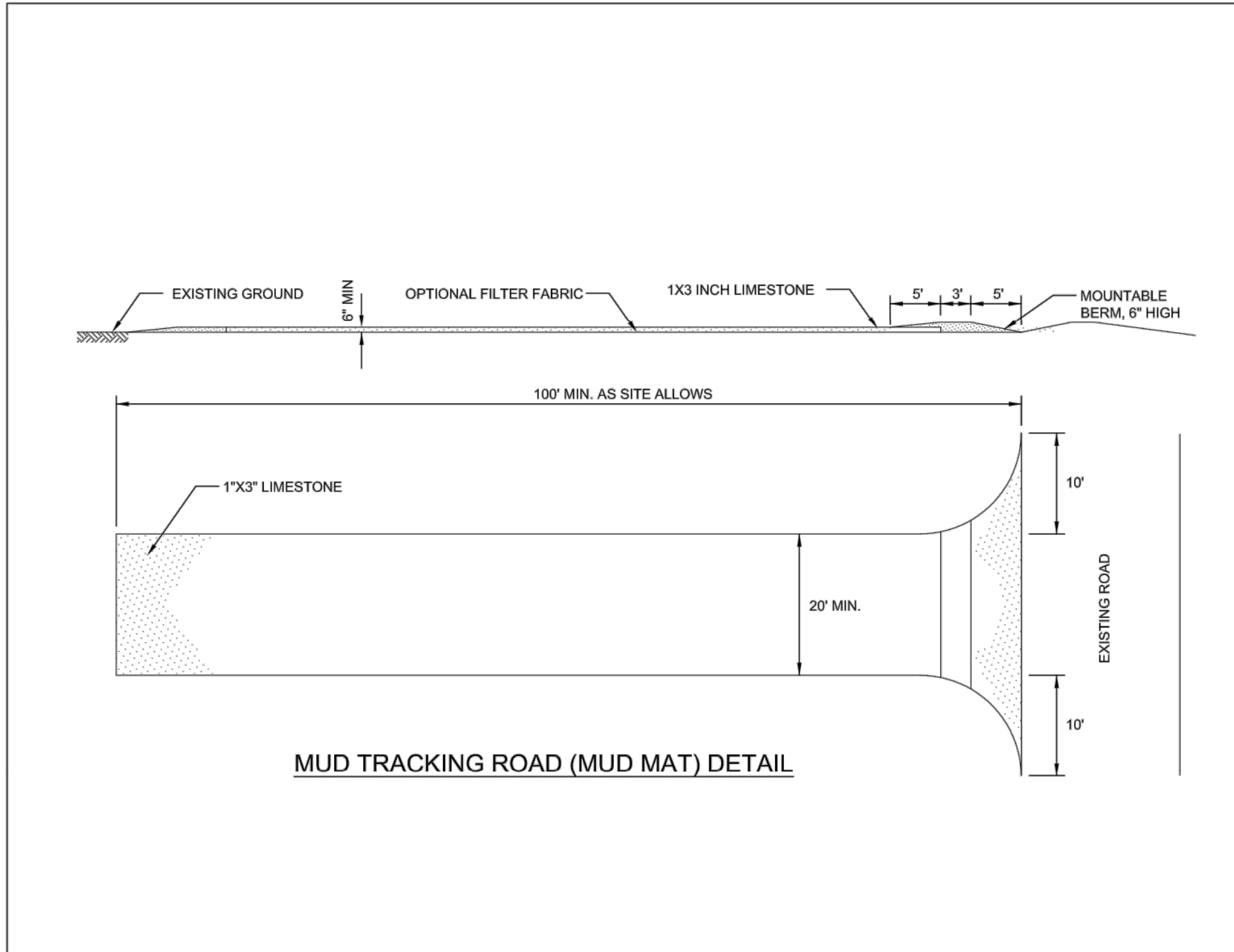
- MINIMUM TRENCH WIDTH (SEE TABLE).
- RECESS TRENCH TO RELIEVE THE BELL OF ALL LOAD. PIPE HAUNCHES SHALL BE COMPACTED.
- 2NS BACKFILL TO DEPTH OF ONE FOOT ABOVE PIPE. TAMPED LAYERS NOT TO EXCEED 6" IN DEPTH. PLATE COMPACT ABOVE PIPE (ON 1st LIFT)
- ALL PIPE TO BE PLACED AND JOINTED IN A DRY TRENCH AND LAID ACCURATELY TO LINE AND GRADE WITH BELLS UP.
- ALL CONCRETE ENCASEMENT AND CRADLING TO BE CLASS "A" CONCRETE.

**BEDDING**





M:\Civil\134\_P\o\1\22095\Pre\iminery\2209501.dwg, 6/16/2023 9:37 AM, Kara J. Vuich, 16 SOIL EROSION DETAILS AND NOTES, MCLLC PDF, p=3  
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**PITTSFIELD CHARTER TOWNSHIP  
SOIL EROSION AND SEDIMENTATION CONTROL NOTES  
GENERAL**

1. The contractor shall implement and maintain the soil erosion control measures as shown on the plans at all times during construction on this project. Any modifications or additions to the soil erosion control measures due to construction or changed conditions, shall be complied with as required or directed by the owner, project engineer or Pittsfield Township.
2. All soil erosion and sedimentation control work shall conform to the permit requirements of Pittsfield Township and the laws of the State of Michigan.
3. A NPDES construction activity permit is required for all sites greater than 5 acres.
4. Daily inspections shall be made by the contractor. Periodic inspections may be made by the owner/project engineer/Township to determine the effectiveness of erosion and sedimentation control measures. Any necessary corrections shall be made without delay.
5. Erosion and sedimentation from work on the site shall be contained on the site and not be allowed to collect on any off-site areas or in waterways.
6. All mud/dirt tracked onto roads from the site due to construction, shall be promptly removed by the contractor.
7. Restoration of all disturbed areas, including placement of topsoil, seed, fertilizer and mulch and/or sod shall be done within 5 days of the completion of final grade.
8. Construction operations shall be scheduled and performed so that preventative soil erosion control measures are in place prior to excavation in critical areas and temporary stabilization measures are in place immediately following backfilling operations.
9. Special precautions will be taken in the use of construction equipment to prevent situations that promote erosion.
10. Proper dust control shall be maintained during construction by use of water trucks and/or chloride as required.
11. The contractor shall be responsible for maintaining all temporary soil erosion control measures and removal of some upon authorized completion of project. Completion of project will not be authorized until all site work, home building, road work and utility construction is complete and all soils are stabilized.
12. The contractor shall not grade in existing wetland or conservation areas to be protected. Silt fence shall be installed and maintained adjacent to existing wetland and conservation areas to prevent grading, erosion and sedimentation into them.
13. Tree protection fencing must remain intact until restoration of the site is complete.

**SEQUENCE OF CONSTRUCTION**

1. Install sediment fence and tree protection fencing prior to any grading operation.
2. Install mud-tracking pad.
3. Construct temporary sediment/detention basin.
4. Place topsoil, fertilizer, seed and mulch over the entire detention basin area.
5. Rough grade site, stockpile topsoil and begin building construction.
6. Install storm drainage system including riprap and parking lot inlet filters and detention basin standpipe.
7. Maintain erosion and sedimentation control measures, as required.
8. Install sanitary sewer and water systems.
9. Bring pavement areas to sub-base grade, place sub-base and bituminous pavement.
10. Install franchised utilities.
11. Finish grade, redistribute topsoil, seed and mulch all disturbed areas.
12. Remove any accumulated sediment within the detention basin and replace clean washed stone around standpipe.
13. Complete construction of site.
14. Insure all soil is stabilized. Remove all temporary soil erosion control measures.

**SEEDING/SOD**

1. Seed or sod in accordance with project specifications.
2. All areas of disturbed earth that are not to be paved or sodded shall have 4 inches of topsoil, seed, fertilizer and mulch.
3. Immediately after seeding, mulch all seeded areas with unweathered small grain straw (preferably wheat) or hay spread. Spread uniformly at the rate of 1 ½ to 2 tons or 100 pounds (2 to 3 bales) per 1,000 square foot. This mulch should be anchored with a disc-type mulch-anchoring tool.
4. Any disturbed area not paved, seeded or mulched, sodded or built upon by November 15, is to be mulched in the manner as specified above, in order to provide soil erosion protection during the winter and early spring.
5. All erosion and sedimentation control prevention procedures and structures are to comply with the Standards and Specifications for soil erosion and sediment control of the Washtenaw County Soil Conservation District.
6. Drainage ditches and slopes steeper than 1:4 (25%) shall be stabilized with erosion control blankets.
7. Steep slopes that do not take upon initial seeding must be re-seeded and stabilized with erosion control blankets.
8. Where excavation has been through lawn areas, the CONTRACTOR shall restore the disturbed area by placing topsoil and seeding or sodding over the final backfill material.

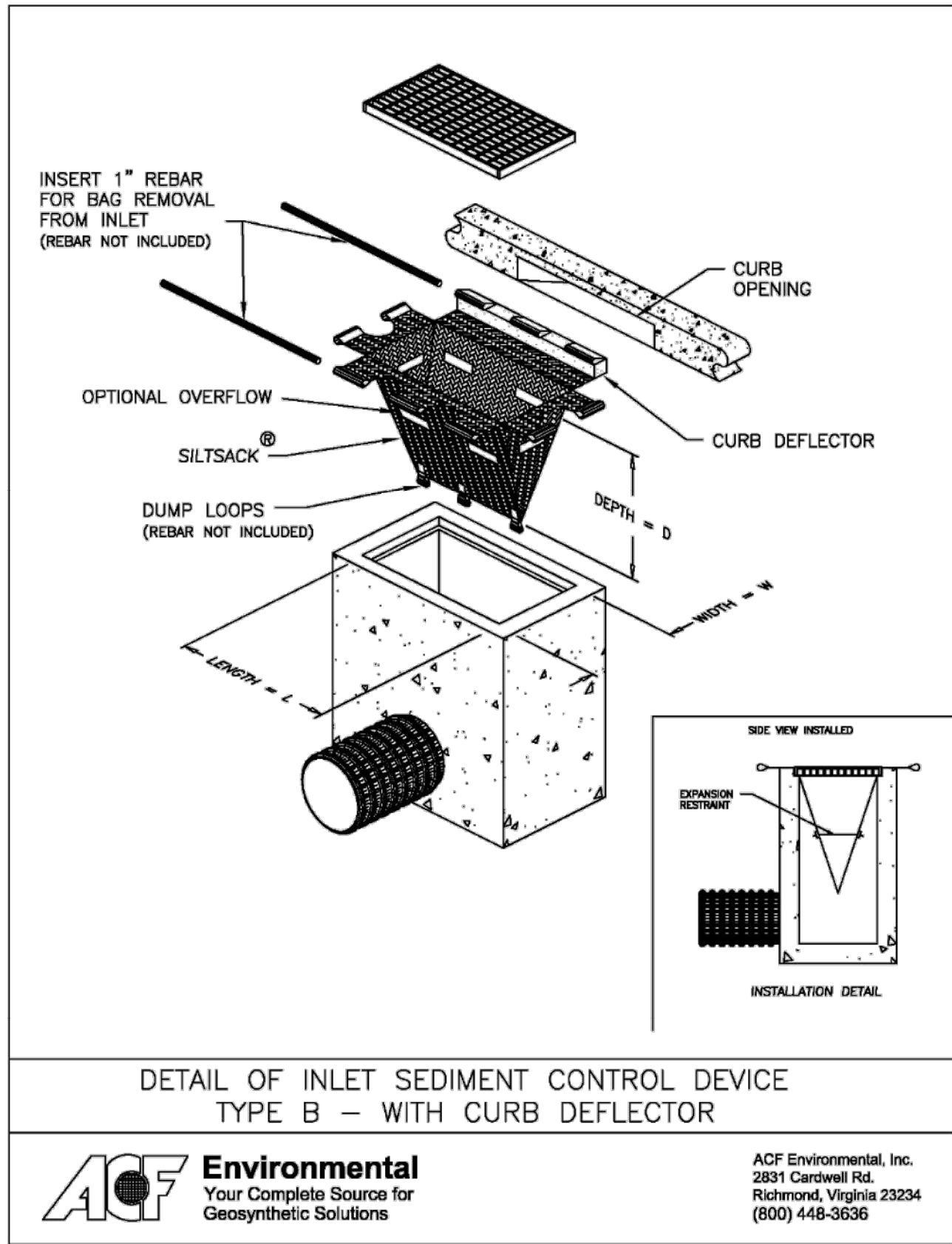
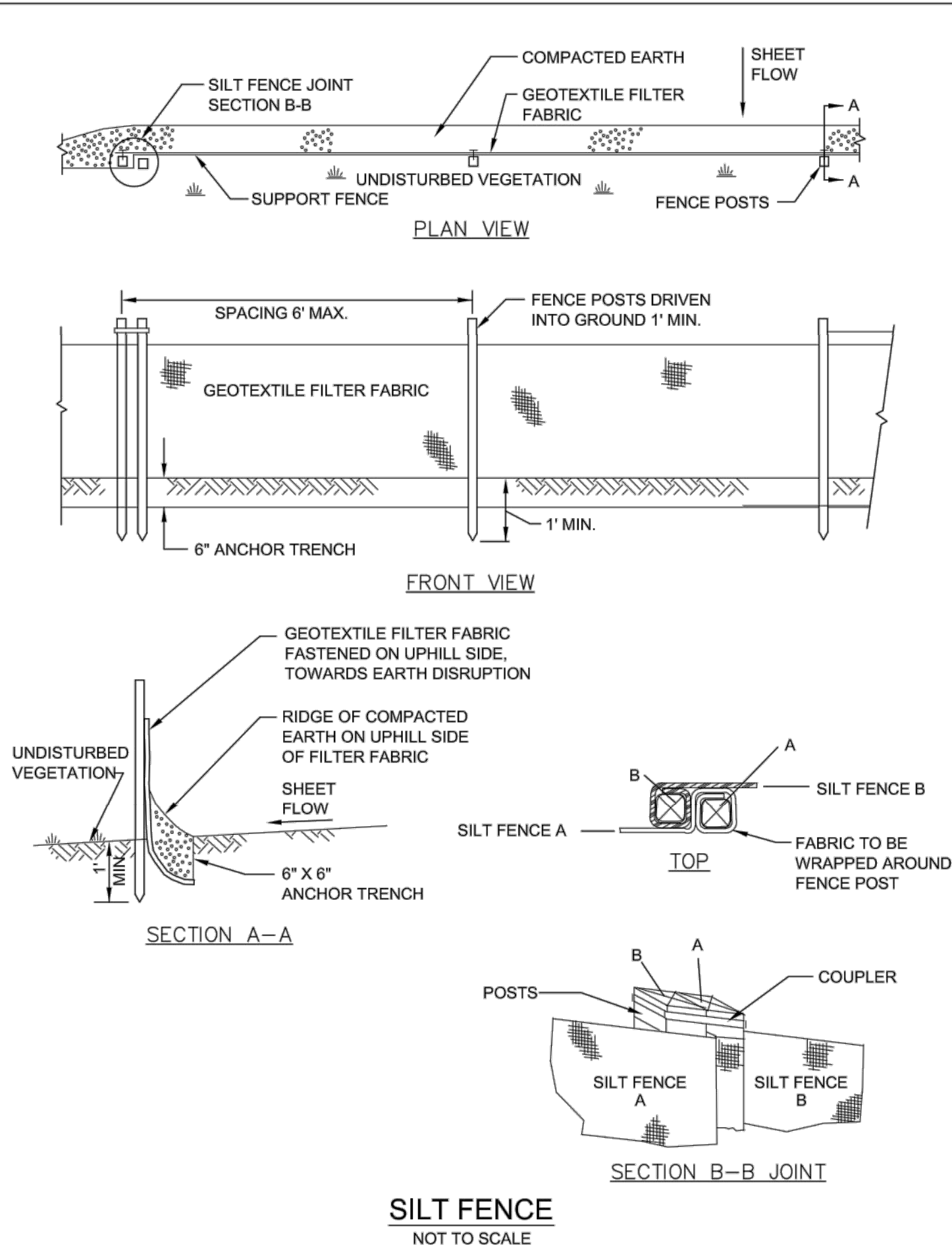
**CATCH BASIN/MANHOLE PROTECTION**

1. Protect storm sewer catch basins with Siltsack, or approved equivalent as follows:

**ROADS**

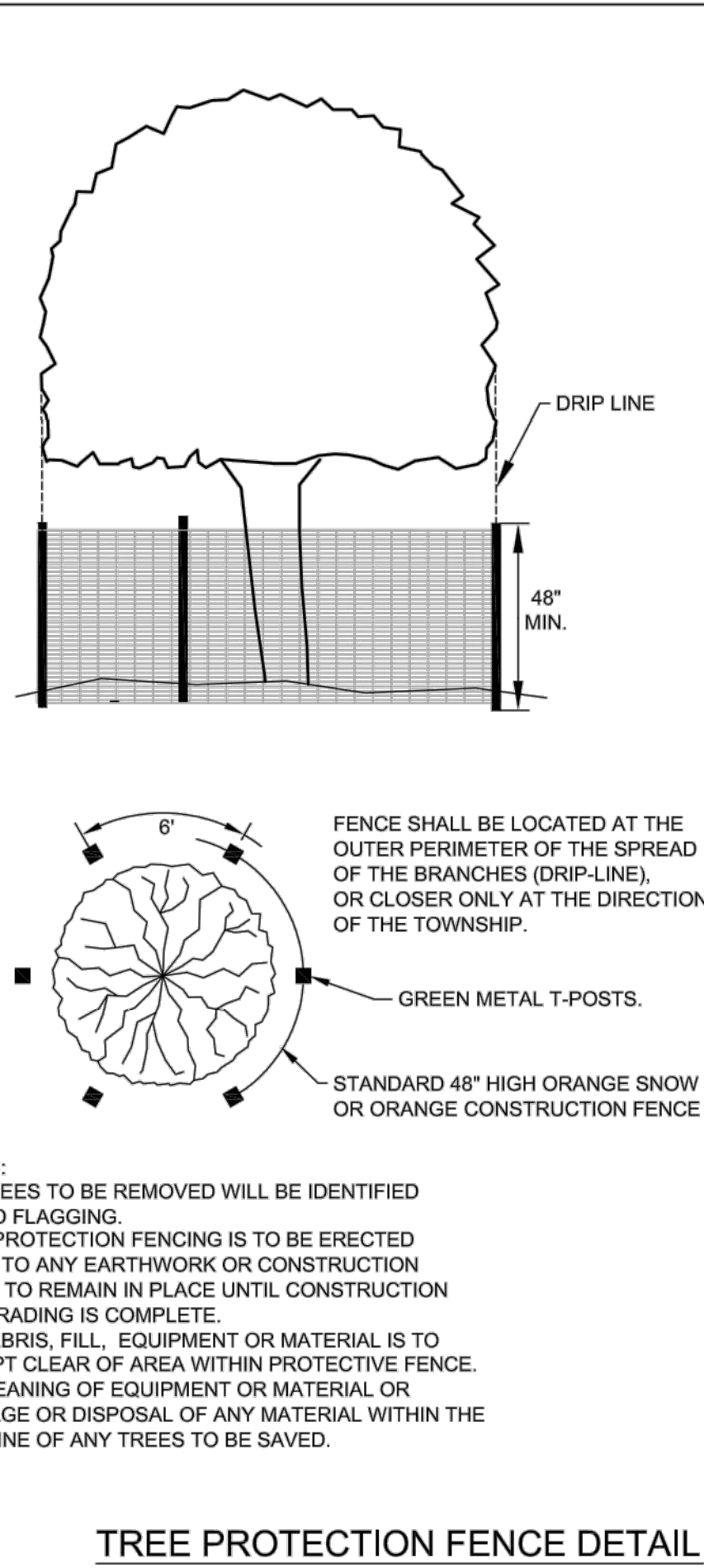
1. During construction, all roads shall be protected from unvegetated areas washing onto road surfaces by placement of silt fence behind curb or a 10 foot wide straw mulch bank behind the curb or other approved method and/or as shown on the plans.
2. During construction of any portion of the project, roads shall be maintained free of dirt, silt and construction debris.

Pittsfield SEC 9/22/2009



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2831 Cardwell Rd.  
Richmond, Virginia 23234  
(800) 448-3636



- NOTES:
1. ALL TREES TO BE REMOVED WILL BE IDENTIFIED BY RED FLAGGING.
  2. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION AND GRADING IS COMPLETE.
  3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED.

SILTSACK® SPECIFICATIONS			
NOTE: THE SILTSACK® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.			
<b>REGULAR FLOW SILTSACK®</b> (FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)			
PROPERTIES	TEST METHOD	UNITS	
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS	
GRAB TENSILE ELONGATION	ASTM D-4632	20 %	
PUNCTURE	ASTM D-4633	120 LBS	
HULLEN BURST	ASTM D-3786	800 PSI	
UV RESISTANCE	ASTM D-4353	90 %	
TRAPEZOID TEAR	ASTM D-4353	45 LBS	
APPARENT OPENING SIZE	ASTM D-4751	40 US. SIEVE	
FLOW RATE	ASTM D-4491	40 GAL./MIN./SQ. FT.	
PERMITTIVITY	ASTM D-4491	0.35 SEC. -1	
<b>* HI-FLOW SILTSACK®</b> (FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)			
PROPERTIES	TEST METHOD	UNITS	
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS	
GRAB TENSILE ELONGATION	ASTM D-4632	20 %	
PUNCTURE	ASTM D-4633	135 LBS	
HULLEN BURST	ASTM D-3786	490 PSI	
TRAPEZOID TEAR	ASTM D-4353	45 LBS	
UV RESISTANCE	ASTM D-4353	90 %	
APPARENT OPENING SIZE	ASTM D-4751	80 US. SIEVE	
FLOW RATE	ASTM D-4491	200 GAL./MIN./SQ. FT.	
PERMITTIVITY	ASTM D-4491	15 SEC. -1	
<b>OIL-ABSORBANT SILTSACK®</b> (FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)			
DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK® WITH A WOVEN PILLLOW INSERT.			
SILTSACK DISTRIBUTORS: PRICE & COMPANY (www.priceandcompany.com)			
METRO GRAND RAPIDS, MI 425 36TH STREET SW WYOMING, MI 49546-2108 1-800-248-6200			
METRO DETROIT, MI 20165 WALL STREET WIXOM, MI 48393-3525 1-866-960-4300			
(* HI-FLOW SILT SACK SHALL BE USED FOR ALL APPLICATIONS WITHIN PITTSFIELD TOWNSHIP)			



Pittsfield Charter Township  
6201 W. Michigan Ave.  
Ann Arbor, MI 48108-9721  
48108-9721  
Tel. 734.822.3101  
www.pittsfield-mi.gov

SILTSACK	BWA	DRW	12.01.03
TWP REV	BWA	DRW	11.04.27
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name: SE-01	TTN	DRW	07.10.01
Permit/Seal	Dwn.	Chkd.	Dagn.
Client/Project	PITTSFIELD TOWNSHIP		
Pittsfield Township, Michigan			
Title	SOIL EROSION DETAILS AND NOTES		
Project No.	2075001300	Scale	NOT TO SCALE
Revision	1		

**OAK VALLEY OUTLOT**  
PRELIMINARY SITE PLAN  
SOIL EROSION DETAILS AND NOTES

**16**

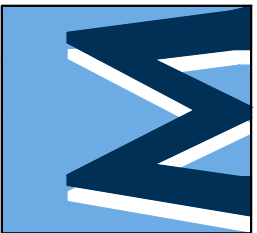
JOB No. 22095

REVISIONS:

DATE: 12/13/22	REV. DATE	SHEET 16 OF 20
CADD: CTS	ENG: TPH	PM: KEB
TECH: JWB	TECH: JWB	TECH: JWB
FILE: 2209501.dwg	FILE: 2209501.dwg	FILE: 2209501.dwg

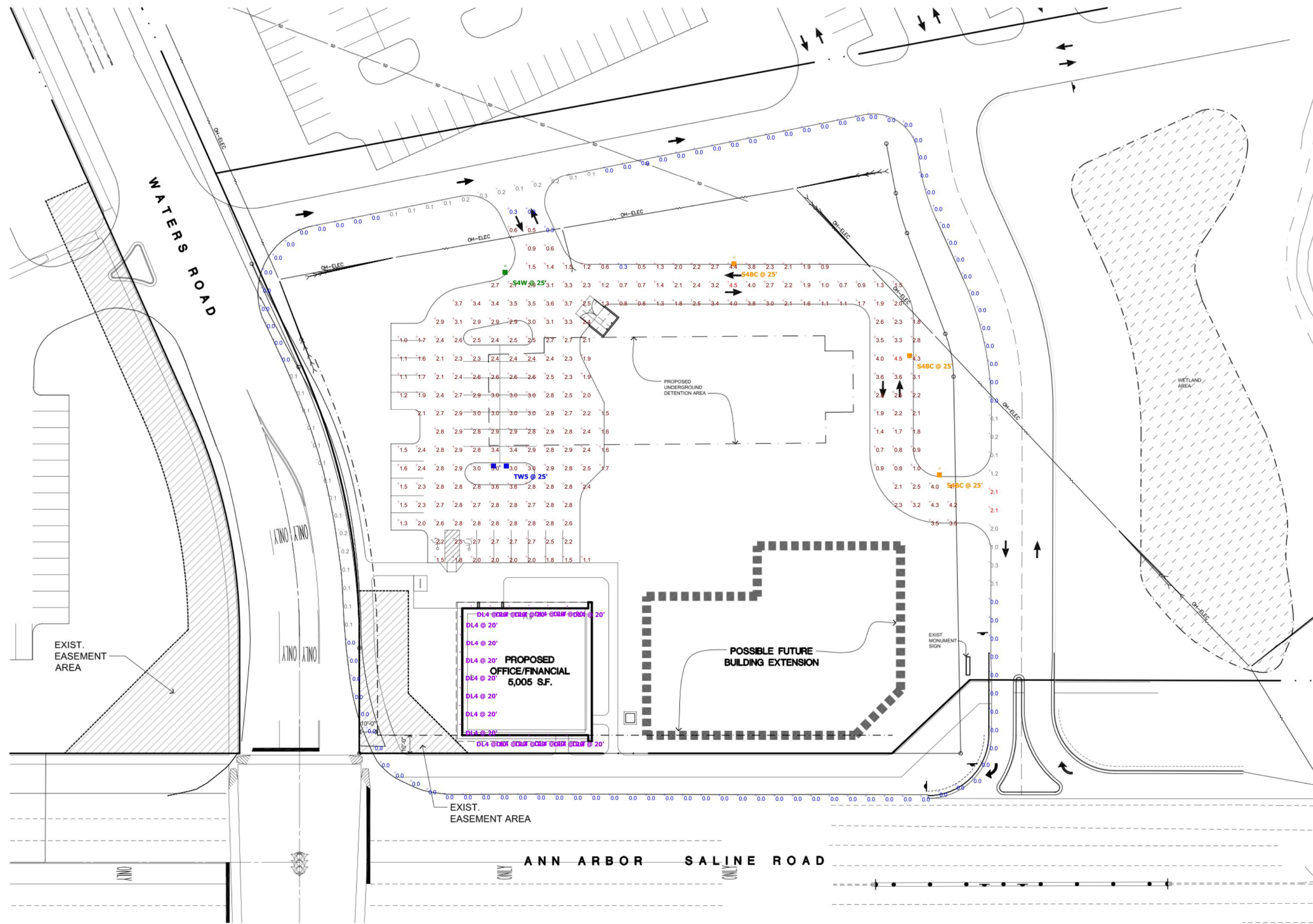
CLIENT

OAK VALLEY MANAGEMENT CO.  
6735 TELEGRAPH ROAD, SUITE 110  
BLOOMFIELD HILLS, MI 48301  
FRED GOLDBERG



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Wireless Communications • Transportation • Landfill Services





View #3

Schedule	Symbol	Label	Image	QTY	Manufacturer	Color	Description	Number Lamps	Lamp Output	LF	Input Power	Power Plot
		S4W		1	REACON PRODUCTS	VP-2-320L-140-467-48		1	21360	0.9	120	
		S4BC		3	REACON PRODUCTS	VP-2-320L-140-467-48-BC	Viper 2.0 Monorail	1	11568	0.9	130	
		TW5		1	REACON PRODUCTS	VP-2-320L-140-467-52W		1	21870	0.9	300	
		DL4		19	PHOSCOLITE	LFB-480-W-15L150000-CPH1_LFB-480-T-CL-5	4" LifeFrame Round Downlight, 1500 lumens, 3500K, 60+ CRI, Narrow, Specular Clear, Clear Lens	1	1438	0.9	11.8	

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Perimeter Rev2	+	0.1 fc	2.1 fc	0.0 fc	N/A	N/A
Parking/Drive Rev2	+	2.4 fc	4.5 fc	0.3 fc	15.0:1	8.0:1

**SITE PLAN**  
Oak Valley Outparcel  
SCALE : 1"=30'-0"

Plan View  
Scale - 1" = 35ft

BEACON  
VIPER Area/Site  
VIPER LUMINAIRE

- FEATURES**
- Low profile LED annular luminaire with a variety of EIS distributions for lighting applications such as auto awareness, view, commercial, and carpool parking lots
  - Featuring two different optical technologies, Beam and Micro Beam Optics, which provide the best distribution patterns for retrofit or new construction
  - Rated for high vibration applications including bridges and overpasses. All sizes are rated for UL94
  - Control options including photo control, occupancy sensing, NX Lighting Controls™, wiSCAPE and iFru with wireless controls
  - New customizable luminaire output features allow for the wattage and lumens output to be customized in the factory to meet whatever specification requirements may arise
  - Field interchangeable mounting provides additional flexibility after the fixture has shipped



**CONTROL TECHNOLOGY**

**SPECIFICATIONS**

**CONSTRUCTION**

- Fixure is designed for hidden vertical heat sink and optional for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with 1000 hour powder coat finish
- Corrosion hardware is corrosion resistant

**OPTICS**

- Micro Beam Optics: 80, 320, 480, or 720 LED covered housing, delivering an even beam of light with a 10° beam angle
- Beam Optics: 80, 320, 480, or 720 LED covered housing, delivering an even beam of light with a 10° beam angle
- Beam Optics: 80, 320, 480, or 720 LED covered housing, delivering an even beam of light with a 10° beam angle

**INSTALLATION CONTINUED**

- All mounting hardware included
- Knockout and filter option available for 2-38" COI holes
- For products with ERS less than 1000 lumens, a 2-38" COI hole is recommended

**ELECTRICAL**

- Universal Input: 120-277 VAC or 347-480 VAC input voltage, 50/60 Hz
- Drivers have greater than 90% power factor
- LED drivers have input power over-voltage, over-current protection and short circuit protection with auto recovery
- LED drivers have input power over-voltage, over-current protection and short circuit protection with auto recovery

**CONTROLS**

- Photo control (on/off) and sensor (on/off) available for retrofit and new construction
- Photo control (on/off) and sensor (on/off) available for retrofit and new construction
- Photo control (on/off) and sensor (on/off) available for retrofit and new construction

**WARRANTY**

- 5 year warranty

**INSTALLATION**

- Mounting hardware for each can be found in page 1
- Optional universal mounting bracket for ease of installation during retrofit applications. Available as an option (A50) or accessory for square and round poles

**Current**

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Rev 05/2023  
PHE\_LFR-4RD\_Sum\_P01

prescolite  
LFR-4RD  
LITERATURE ROUND DOWNLIGHT

**FEATURES**

- 4" LED downlight delivering 1000-6000 lumens
- Direct install from below ceiling for New Construction or Remodel applications
- Optional housing accessories available
- Five beam distributions

- 2700K-5000K, 80+ and 90+ CRI (2 SDCM)
- Dimming compatible include 0-10V, Phase Forward/Reverse, DALI, DMX, Lutron 2-way Forward/Back, and EcoSystem
- No Lighting Controls wired and wireless controls capability available

**CONTROL TECHNOLOGY**

**SPECIFICATIONS**

**CONSTRUCTION**

- Standard Fixture Module designed for Non-C, Direct Install construction
- Optional Non-C, Frame or C, Housing available with pre-installed bar hangers
- Die cast aluminum fixture module supporting ring with spring steel clips for secure mounting to ceiling
- Driver 480 can be installed and disassembled from below the ceiling, direct install or easily snap on to optional housing frame/cover
- Light Engine connections use premium rated 24" cable

**OPTICS**

- High purity pure aluminum reflector, self-forging
- 57° visual cutoff to source image and 37° cutoff to source
- Specular or Semi-Specular finished on White painted, Low reflector finish coating
- Prefabricated flange options in White or Black
- Optional clear lens trim for wet location applications
- Wide Angle and Soft Focus lens flange accessories available

**INSTALLATION**

- Accommodates ceiling thickness from 0.50" to 2.50"

**KEY DATA**

Lumen Range	1000-6000
Wattage Range	8-60
Efficiency Range (lm/W)	80-100
Reported (lm/W)	100-150/10000
Input Current (mA)	85-425 (20V)

Based on Specimen: 30K, 80 CRI

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PHE\_LFR-4RD\_Sum\_P01

BEACON  
VIPER Area/Site  
MICROSTRIKE OPTICS - ORDERING GUIDE

LM	Optic Profile	Size	Light Engine	CT/CRI	Overhang	Output	Notes
LM-100	Micro Beam	100	100	5000K	100	100	100
LM-200	Micro Beam	200	200	5000K	200	200	200
LM-300	Micro Beam	300	300	5000K	300	300	300
LM-400	Micro Beam	400	400	5000K	400	400	400
LM-500	Micro Beam	500	500	5000K	500	500	500
LM-600	Micro Beam	600	600	5000K	600	600	600
LM-700	Micro Beam	700	700	5000K	700	700	700
LM-800	Micro Beam	800	800	5000K	800	800	800
LM-900	Micro Beam	900	900	5000K	900	900	900
LM-1000	Micro Beam	1000	1000	5000K	1000	1000	1000
LM-1100	Micro Beam	1100	1100	5000K	1100	1100	1100
LM-1200	Micro Beam	1200	1200	5000K	1200	1200	1200
LM-1300	Micro Beam	1300	1300	5000K	1300	1300	1300
LM-1400	Micro Beam	1400	1400	5000K	1400	1400	1400
LM-1500	Micro Beam	1500	1500	5000K	1500	1500	1500
LM-1600	Micro Beam	1600	1600	5000K	1600	1600	1600
LM-1700	Micro Beam	1700	1700	5000K	1700	1700	1700
LM-1800	Micro Beam	1800	1800	5000K	1800	1800	1800
LM-1900	Micro Beam	1900	1900	5000K	1900	1900	1900
LM-2000	Micro Beam	2000	2000	5000K	2000	2000	2000
LM-2100	Micro Beam	2100	2100	5000K	2100	2100	2100
LM-2200	Micro Beam	2200	2200	5000K	2200	2200	2200
LM-2300	Micro Beam	2300	2300	5000K	2300	2300	2300
LM-2400	Micro Beam	2400	2400	5000K	2400	2400	2400
LM-2500	Micro Beam	2500	2500	5000K	2500	2500	2500
LM-2600	Micro Beam	2600	2600	5000K	2600	2600	2600
LM-2700	Micro Beam	2700	2700	5000K	2700	2700	2700
LM-2800	Micro Beam	2800	2800	5000K	2800	2800	2800
LM-2900	Micro Beam	2900	2900	5000K	2900	2900	2900
LM-3000	Micro Beam	3000	3000	5000K	3000	3000	3000
LM-3100	Micro Beam	3100	3100	5000K	3100	3100	3100
LM-3200	Micro Beam	3200	3200	5000K	3200	3200	3200
LM-3300	Micro Beam	3300	3300	5000K	3300	3300	3300
LM-3400	Micro Beam	3400	3400	5000K	3400	3400	3400
LM-3500	Micro Beam	3500	3500	5000K	3500	3500	3500
LM-3600	Micro Beam	3600	3600	5000K	3600	3600	3600
LM-3700	Micro Beam	3700	3700	5000K	3700	3700	3700
LM-3800	Micro Beam	3800	3800	5000K	3800	3800	3800
LM-3900	Micro Beam	3900	3900	5000K	3900	3900	3900
LM-4000	Micro Beam	4000	4000	5000K	4000	4000	4000
LM-4100	Micro Beam	4100	4100	5000K	4100	4100	4100
LM-4200	Micro Beam	4200	4200	5000K	4200	4200	4200
LM-4300	Micro Beam	4300	4300	5000K	4300	4300	4300
LM-4400	Micro Beam	4400	4400	5000K	4400	4400	4400
LM-4500	Micro Beam	4500	4500	5000K	4500	4500	4500
LM-4600	Micro Beam	4600	4600	5000K	4600	4600	4600
LM-4700	Micro Beam	4700	4700	5000K	4700	4700	4700
LM-4800	Micro Beam	4800	4800	5000K	4800	4800	4800
LM-4900	Micro Beam	4900	4900	5000K	4900	4900	4900
LM-5000	Micro Beam	5000	5000	5000K	5000	5000	5000

**CONSTRUCTION**

- Fixure is designed for hidden vertical heat sink and optional for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with 1000 hour powder coat finish
- Corrosion hardware is corrosion resistant

**OPTICS**

- Micro Beam Optics: 80, 320, 480, or 720 LED covered housing, delivering an even beam of light with a 10° beam angle
- Beam Optics: 80, 320, 480, or 720 LED covered housing, delivering an even beam of light with a 10° beam angle
- Beam Optics: 80, 320, 480, or 720 LED covered housing, delivering an even beam of light with a 10° beam angle

**INSTALLATION CONTINUED**

- All mounting hardware included
- Knockout and filter option available for 2-38" COI holes
- For products with ERS less than 1000 lumens, a 2-38" COI hole is recommended

**ELECTRICAL**

- Universal Input: 120-277 VAC or 347-480 VAC input voltage, 50/60 Hz
- Drivers have greater than 90% power factor
- LED drivers have input power over-voltage, over-current protection and short circuit protection with auto recovery
- LED drivers have input power over-voltage, over-current protection and short circuit protection with auto recovery

**CONTROLS**

- Photo control (on/off) and sensor (on/off) available for retrofit and new construction
- Photo control (on/off) and sensor (on/off) available for retrofit and new construction
- Photo control (on/off) and sensor (on/off) available for retrofit and new construction

**WARRANTY**

- 5 year warranty

**INSTALLATION**

- Accommodates ceiling thickness from 0.50" to 2.50"

**KEY DATA**

Lumen Range	1000-6000
Wattage Range	8-60
Efficiency Range (lm/W)	80-100
Reported (lm/W)	100-150/10000
Input Current (mA)	85-425 (20V)

Based on Specimen: 30K, 80 CRI

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PHE\_VIPER-2-320L-45-3K-2-8-UNV-A3-BLT

BEACON  
SSS-B Series Poles  
SQUARE STRAIGHT STEEL

LM	Optic Profile	Size	Light Engine	CT/CRI	Overhang	Output	Notes
LM-100	Micro Beam	100	100	5000K	100	100	100
LM-200	Micro Beam	200	200	5000K	200	200	200
LM-300	Micro Beam	300	300	5000K	300	300	300
LM-400	Micro Beam	400	400	5000K	400	400	400
LM-500	Micro Beam	500	500	5000K	500	500	500
LM-600	Micro Beam	600	600	5000K	600	600	600
LM-700	Micro Beam	700	700	5000K	700	700	700
LM-800	Micro Beam	800	800	5000K	800	800	800
LM-900	Micro Beam	900	900	5000K	900	900	900
LM-1000	Micro Beam	1000	1000	5000K	1000	1000	1000
LM-1100	Micro Beam	1100	1100	5000K	1100	1100	1100
LM-1200	Micro Beam	1200	1200	5000K	1200	1200	1200
LM-1300	Micro Beam	1300	1300	5000K	1300	1300	1300
LM-1400	Micro Beam	1400	1400	5000K	1400	1400	1400
LM-1500	Micro Beam	1500	1500	5000K	1500	1500	1500
LM-1600	Micro Beam	1600	1600	5000K	1600	1600	1600
LM-1700	Micro Beam	1700	1700	5000K	1700	1700	1700
LM-1800	Micro Beam	1800	1800	5000K	1800	1800	1800
LM-1900	Micro Beam	1900	1900	5000K	1900	1900	1900
LM-2000	Micro Beam	2000	2000	5000K	2000	2000	2000
LM-2100	Micro Beam	2100	2100	5000K	2100	2100	2100
LM-2200	Micro Beam	2200	2200	5000K	2200	2200	2200
LM-2300	Micro Beam	2300	2300	5000K	2300	2300	2300
LM-2400	Micro Beam	2400	2400	5000K	2400	2400	2400
LM-2500	Micro Beam	2500	2500	5000K	2500	2500	2500
LM-2600	Micro Beam	2600	2600	5000K	2600	2600	2600
LM-2700	Micro Beam	2700	2700	5000K	2700	2700	2700
LM-2800	Micro Beam	2800	2800	5000K	2800	2800	2800
LM-2900	Micro Beam	2900	2900	5000K	2900	2900	2900
LM-3000	Micro Beam	3000	3000	5000K	3000	3000	3000
LM-3100	Micro Beam	3100	3100	5000K	3100	3100	3100
LM-3200	Micro Beam	3200	3200	5000K	3200	3200	3200
LM-3300	Micro Beam	3300	3300	5000K	3300	3300	3300
LM-3400	Micro Beam	3400	3400	5000K	3400	3400	3400
LM-3500	Micro Beam	3500	3500	5000K	3500	3500	3500
LM-3600	Micro Beam	3600	3600	5000K	3600	3600	3600
LM-3700	Micro Beam	3700	3700	5000K	3700	3700	3700
LM-3800	Micro Beam	3800	3800	5000K	3800	3800	3800
LM-3900	Micro Beam	3900	3900	5000K	3900	3900	3900
LM-4000	Micro Beam	4000	4000	5000K	4000	4000	4000
LM-4100	Micro Beam	4100	4100	5000K	4100	4100	4100
LM-4200	Micro Beam	4200	4200	5000K	4200	4200	4200
LM-4300	Micro Beam	4300	4300	5000K	4300	4300	4300
LM-4400	Micro Beam	4400	4400	5000K	4400	4400	4400
LM-4500	Micro Beam	4500	4500	5000K	4500	4500	4500
LM-4600	Micro Beam	4600	4600	5000K	4600	4600	4600
LM-4700	Micro Beam	4700	4700	5000K	4700	4700	4700
LM-4800	Micro Beam	4800	4800	5000K	4800	4800	4800
LM-4900	Micro Beam	4900	4900	5000K	4900	4900	4900
LM-5000	Micro Beam	5000	5000	5000K	5000	5000	5000

**CONSTRUCTION**

- Fixure is designed for hidden vertical heat sink and optional for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with 1000 hour powder coat finish
- Corrosion hardware is corrosion resistant

**OPTICS**

- Micro Beam Optics: 80, 320, 480, or 720 LED covered housing,

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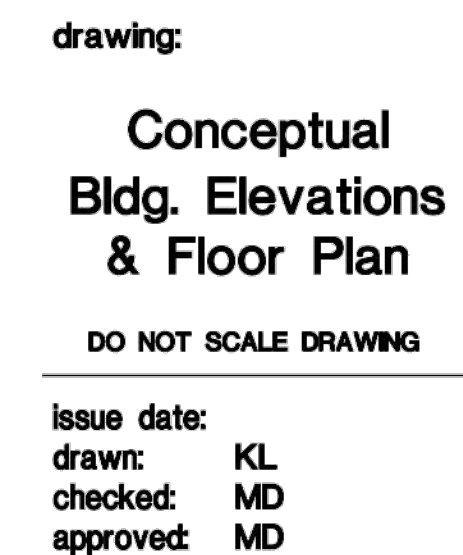
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Proposed Bldg. A

# Oak Valley Outparcel

NWC Ann Arbor - Seline Rd. & Waters Rd.  
Pittsfield Twp., Michigan



sheet:

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TOTAL: 200%

